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## INTEGRATED MANAGEMENT OF PROTECTED AREAS

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## INTEGRATED MANAGEMENT OF PROTECTED AREAS

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## FOREWORD Janez Podobnik

Dear readers,

The present thematic issue of the Public Enterprise Quarterly Journal published by the International Center for Promotion of Enterprises (ICPE) has shown once again that ICPE remains firm to the principle of participative management and sustainable development that were over two decades ago introduced by the Honorary President of the ICPE Council, Academician Dr. Anton Vratuša, who continued to be the spiritus agens in this direction up until today. I am honoured that I had the opportunity to participate in ICPE's endeavours to promote sustainable development as one of its core activities.

As someone who, in the previously held positions, closely dealt with the issue of sustainable development, especially in the first half of 2008 when Slovenia presided the Council of the European Union, I received an additional confirmation of the importance of sustainable development in international development projects, particularly for the developing countries which have been ICPE's raison d'être from its establishment by the United Nations Organization in 1974 all along its forty years of existence.

I became more acquainted with ICPE when in my quality of Director of ECPD International Institute for Sustainable Development, Urban Planning and Environment Studies we organised together with ICPE the international conference "Integrated Environment Management of the Adriatic/ Mediterranean–Black Sea Coastal Areas and the Danube/Sava River Basins Focused on Transport and Tourism" in November 2010.

After becoming the ICPE Acting Director General in spring 2012 we intensified our international projects in the field of energy efficiency and the role of public-private partnerships. Within the framework of ICPE's renewed cooperation with UNIDO (United Nations Industrial Development Organization) we organise yearly training courses dedicated to sustainable energy solutions.

Moreover, ICPE covers the issue of sustainability during international conferences and symposia held both in Slovenia, ICPE's host country, such as the international conference "Benefits and Challenges of Public-Private Partnerships for Improving Energy Efficiency" (Ljubljana, Slovenia – 2012) or the ICPE – ICIE international conference "Energy Efficiency and Energy Saving Technology: the Present and the Future" (Ljubljana – 2013), as well as on other continents – for example the

"Uplifting the Environment: Nigeria Goes Green" international conference and workshop (Ogun State, Nigeria – 2013) or the international conference on "Public-Private Partnership – The Need of the Hour" (Hyderabad, India – 2014).

The content of the Journal's present edition is particularly important since it relies on the concrete cases of Slovenian nature parks that accomplished the synthesis between the requirements of sustainable development, new forms of sustainable tourism and other activities enabling the coexistence of man and nature. Slovenia is, due to its biodiversity and its geographic position, indeed a good example to illustrate the ways in which the principle of coexistence is put into practice.

My sincere wish is that the articles contained in this thematic edition are found interesting by the ICPE member states and other countries currently in the process of becoming closer to our organisation and that together with them in the future we will prepare a new edition of our publication on integrated management of protected areas.

Last, but not least, I would like to convey my thanks to all contributing authors and to the members of the editorial board that has been presided with his characteristic perseverance by Dr. Anton Vratuša.

### **EDITORIAL NOTE**

A thematic issue of the PUBLIC ENTERPRISE OUARTERLY JOURNAL on Nature Parks for Integrated Management of Protected Areas has been developed in cooperation with the Slovenian Nature Parks Association. The thematic issue represents a continuation of the ICPE's long-term programme of research-trainingconsultancy and capacity building, focused on the Integrated Management of Protected Areas for sustainable development. The main goal of the PUBLIC ENTERPRISE (PE) JOURNAL thematic issue has been to prepare comprehensive background documentation for assisting ICPE member countries and interested partners in their efforts to find and develop adequate solutions for the establishment and integrated management of protected nature areas, as a tool for protecting and safeguarding biotic diversity of sites in the NATURA 2000 network and ensuring that economic growth goes hand in hand with the need to protect and restore valuable natural heritage. At the same time, the thematic PE issue provides an opportunity for a fruitful exchange of experts' views for evaluations on the merit of the assembled documents for the management of nature parks and integrated management of protected areas.

Individual or collective approach to the issues of wellbeing and prosperity of the people living in protected areas might act as inspiration for a desired revival of the countryside according to the sustainable development principles. Increasing threats to the future of mankind, water, soil and air pollution require an urgent change in the present world development policy, based upon over-exploitation of natural resources. Contemporary people are well aware of the adverse and self-defeating practices. At the same time, they are well equipped scientifically and technologically to ensure a positive change in favour of sustainable development, a healthy life for all, as well as the prosperity of the present and future generations. What people need is to understand a well-organised, science-based environmental policy towards a resource-efficient, low-carbon economy, in which the existing natural resources are safeguarded and enhanced.

In this connection we refer to the definition given by the International Union for the Conservation of Nature (IUCN) that a protected area is "a clearly defined geographical space, recognised, dedicated and managed, through legal and other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values". In order to make this definition applicable in practice, we have to complete the thought by adding the following: "Whereas protected areas have a primary goal of safeguarding species and habitats of conservation concern as well as supporting natural processes they are also a vital

tool for sustainable development, in supporting the livelihoods of people who live in and around these areas."<sup>1</sup>

Europe has suffered a greater loss and fragmentation of natural habitats than any other similarly-sized area of the planet due to the density of its population and history of land use and ownership. With the aim to mitigate the consequences of environmental deterioration and strengthen the trends towards the sustainable development, the Natura 2000 was created, as the cornerstone of the European Biodiversity Strategy. Natura 2000 sites in the European Union represent the largest coordinated network of protected areas in the world, based on the idea of integrated management for nature and people in protected areas. Putting this idea into practice requires an active involvement of the people at local, regional, international and global levels and a well-coordinated, innovative functioning of the network.

In the European Union there is already a great deal of experience in relation to management and restoration projects for protected areas, particularly under the LIFE Programme, an outdoor laboratory to test the techniques and show the best practices in capacity building needed to manage the protected areas network in the long term. In the last twenty years, the LIFE Programme has co-financed several projects and provided over one billion Euros for activities under the EU Habitats Directive, a tool to guide managers and other interested social actors in dealing with the conservation of the Natura 2000 sites, on the basis of agreed upon mutual commitment regarding respective responsibilities and rights of different socio-economic, health and cultural actors and authorities in implementing the necessary conservation measures for achieving the common goals. Management planning is a key tool for the realisation of the Natura 2000 sites are considered obligatory for the EU Member States.

Within this framework, the Republic of Slovenia, like other members of the European Union, has by law or other mandatory measures and policies designed corresponding strategies and measures necessary for obtaining the identified targets. Since the late nineties of the 20<sup>th</sup> century and the beginning of the 21<sup>st</sup> century, the mentioned long-term targets represent the priority goals of research, education and consultancy programmes of the International Centre for Promotion of Enterprises. Among the major programmes and events are: Integrated Costal Area Management in cooperation with the International Ocean Institute (IOI), based at the University of Malta and functioning as a network of Operational IOI Centres in different countries of Europe, Africa, South America and Australia; International Conference on Integrated Coastal Area Management with special regard to the needs of the

<sup>&</sup>lt;sup>1</sup> Janez Potočnik, member of the European Commission, in "Sustainable Development through Integrated Management of Protected Areas - The EU experience of the Natura 2000 network"

Republic of Slovenia, organised in cooperation with the coastal municipalities of Slovenia, May 1999; International Conference on ICAM of the Adriatic/Black Sea Region and Danube/Sava River Basin, November 2010; and Expert Round Table on Integrated Management of the Goričko Nature Park, May 2011. In the framework of these activities, a special research-training-consultancy and capacity building project was designed as a special issue of the Public Enterprise Quarterly Thematic Issue, containing a collection of scientific papers, case studies and success stories. It is divided into three parts:

- I. Scientific papers, six all together, deal with sustainable development through integrated management of protected areas, the experiences in Natura 2000 sites management, ten years of experiences from the European Green Belt Initiative, social responsibility of protected areas management, demographic development of the Goričko Nature Park, the role of organic agriculture, electromagnetic sensing and nature parks, etc.
- II. Case studies on nature parks for integrated management of protected areas, nine all together, contain analytical papers on nature parks from the Goričko Nature Park, Kozjansko Regional Park and Kolpa Nature Park on the eastern side of Slovenia, the Škocjanski Zatok Nature Reserve, Škocjan Caves Regional Park, Strunjan Nature Park and Sečovlje Salina Nature Park in the south; Ljubljana Marsh Nature Park and Logar Valley Nature Park in the central region, as well as the Triglav National Park, the largest and the oldest nature park in Slovenia. The case studies are preceded by an analytical article about the nature conservation and protected areas policy in Slovenia.

The presented nature parks were established mostly by law or regulations, with the exception of the Logar Valley Nature Park which was set up by a group of private land owners in agreement with the respective municipal authorities. Notranjsko Regional Park was organised by the local municipality of Cerknica. Apart from Škocjanski Zatok Nature Reserve and Sečovlje Saline Nature Park, which are managed by an NGO and a private company respectively, the parks are managed by public institutes. Their annual and five-year action plans for integrated management of protected areas contain the agreed upon targets, measures for their implementation, time schedules and the required financial resources and instruments, following the guidelines of the local, regional and national sustainable development policy. Concrete projects, their size and number depend upon the nature of the selected area, use of the land (forests, meadows, arable fields etc.), density of population, geographical position; consequently they have to be assessed and designed case by case, having in view variety of circumstances and priority of targets.

III. Success stories – seven altogether – describe successful innovative activities of children in primary schools (how the extinction of pottery has been stopped in Goričko – Grad Primary School, school garden at Puconci Primary School – organic agricultural production), processing and trade of healthy food for local, regional and national needs, renewal of agricultural activity – Agricultural and Tourist Cooperative Žitek, meadow orchards in the Kozjansko Park and Bio-Farm Gorička ves, introduction of youth into science, technology and imagination – Kmica Astronomical Society at Murska Sobota and Vulcania Adventure Park Grad. All of the presented success stories are well progressing and promising for the renewal of the countryside and wellbeing of people living in protected areas.

The Editorial Board Ljubljana, May 2014 I. SCIENTIFIC PAPERS

## SUSTAINABLE DEVELOPMENT THROUGH INTEGRATED MANAGEMENT OF PROTECTED AREAS – THE EU EXPERIENCE OF THE NATURA 2000 NETWORK Janez Potočnik

#### Protected Areas as a Tool for Sustainable Development

The EU's economic prosperity and well-being is underpinned by its natural capital which includes ecosystems that provide essential goods and services to society. The new EU 7<sup>th</sup> Environment Action Programme aims to step up the contribution of environmental policy towards a resource-efficient, low-carbon economy in which this natural capital is protected and enhanced, and the health and well-being of our citizens is safeguarded. Protected areas are a key tool to help ensure the conservation and sustainable use of natural capital.

Protected areas are central to national and global biodiversity strategies for the conservation and sustainable use of areas of high biodiversity value. The definition given by the International Union for the Conservation of Nature (IUCN) that a protected area is "a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values" is widely applicable. Whereas protected areas have a primary goal to safeguard species and habitats of conservation concern as well as supporting natural processes they are also a vital tool for sustainable development, in supporting the livelihoods of people who live in and around these areas.

Protected areas may take different forms, from strictly protected nature reserves to landscapes protected areas. This not only reflects conservation goals but also the physical reality of the regions in which they are developed. Europe has suffered a greater loss and fragmentation of natural habitats than any other similarly sized area of the planet. Due to the density of its population and history of land use and ownership we were therefore forced to think differently in developing an EU network of protected areas. The main biodiversity policy response has been the creation of Natura 2000, the cornerstone of the EU Biodiversity strategy, that aims to halt and reverse the loss of biodiversity and ecosystem services by 2020.

Natura 2000 is the largest coordinated network of protected areas anywhere in the world. Created under the EU Birds and Habitats Directives it now embraces over 26,000 sites and covers almost a fifth of our land territory, with substantial marine areas. But Natura 2000 is much more than nature reserves. Many of the areas are privately owned and from the outset the EU has aimed to better embrace

the coexistence between people and nature, as well as to allow for sustainable land and water use management and sustainable development of economic activities in such areas. This is how the concept of Natura 2000 emerged, based on the idea of integrated management, which should enable sustainable livelihoods and healthy nature in areas which are still rich in biodiversity.

#### **Management for Nature and People**

Now that Natura 2000 is largely established the key challenge is to ensure the sustainable management of the protected areas. Many of the sites are in poor condition and in need of restoration and active management. It will require a great deal of commitment and energy in the coming years if it is to become a truly functional network and play its full role in achieving EU biodiversity and sustainable development goals.

We know that this is possible. There is already a great deal of experience in the EU in relation to management and restoration projects for protected areas, particularly under the EU LIFE programme, which has provided an outdoor laboratory to test out techniques and show what works in practice. LIFE has also strategically helped build the capacity required to manage the protected area network in the long term. It has also been a key tool to develop partnerships and has helped eliminate initial resistance in many sectors to nature designations. Despite its relatively small size, LIFE has co-financed about 1,250 projects and provided some  $\pounds$ 1.2 billion over the last 20 years. LIFE has targeted some 2,200 Natura 2000 sites and it is now increasingly covering a significant portion of the marine network. This has resulted in the recovery of significant areas of threatened habitats such as peatlands and grasslands, as well as of populations of species such as birds of prey and large carnivores.

Management planning is a key tool to achieve success. Although not an automatic requirement under the Habitats Directive, management plans seem to be a preferred option for most EU Member States and are even considered obligatory in some of them. In general, management plans are used to formulate the site's conservation objectives together with the measures necessary to attain these objectives. They are often used as a tool to guide managers and other interested parties in dealing with the conservation of Natura 2000 sites, and to lay down the respective responsibilities of the different socio-economic stakeholders and authorities in implementing the necessary conservation measures that have been identified.

Management plans can be stand-alone documents or can also be 'integrated into other development plans', in conformity with the principle of integration of the environment into other EU policies. In the case of an integrated plan, it is important

to ensure that clear targets and conservation measures are set for the relevant habitats and species present on the site. Sectoral management plans, which set conservation objectives and specific measures for Natura 2000 sites that are relevant to a particular sector such as forestry, agriculture or water, etc., help ensure effective management integration.

Management plans are also a useful tool for ensuring clarity and transparency of processes, enabling all stakeholders to be informed about what Natura 2000 sets out to achieve and engaging their active participation in this discussion. They may also help identifying the funding for the measures and achieving better integration into other plans.

#### Using an 'Integrated Approach' for Investment in Protected Areas

The effective management of protected areas such as Natura 2000 requires a very significant investment of resources. According to estimates provided by EU Member States this will cost about  $\in$  5.8 billion per year. In these very difficult economic times it is not – at first sight – easy to argue for such sums of money. However, investing in Natura 2000 provides multiple benefits to society and the economy at the local, regional, national and EU level. The network is a major store of carbon rich habitats and through carbon storage and sequestration has an important role to play in responding to the challenges we face from climate change, both through mitigation and adaptation. It also delivers many other socio-economic benefits such as maintaining water flow and quality, conserving natural pollinators, preserving landscape and amenity quality and supporting tourism and recreation.

According to a recent study the Natura 2000 network is estimated to be worth around  $\notin$ 200–300 billion per year, many times more than the cost of managing the network. It is estimated that there are between 1.2 to 2.2 billion visitor days to Natura 2000 sites each year, generating recreational benefits worth between  $\notin$ 5 and  $\notin$ 9 billion per annum. The strong legal protection underpinning Natura 2000 also has an added value in providing long term security of investments. Natura 2000 also forms the backbone of the future "Green Infrastructure" aimed at safeguarding the flow of ecosystem services. Natura 2000 is therefore very much linked to the Europe 2020 agenda of investment for growth and jobs.

The strategy is to integrate the financing of Natura 2000 into the funding streams of different EU policy sectors. This approach was chosen to ensure that the management of the sites is part of the wider land and water management policies, to allow Member States to set priorities, to develop policies and measures which reflect their national and regional specificities, to avoid duplication or overlap of different EU funding instruments, the administrative complication and transaction costs which would be associated with such duplication. In this context there are opportunities for investment in Natura 2000 under the EU Common Agricultural, Maritime and Fisheries, and Cohesion policy funds.

In order to ensure a better use of these opportunities across all EU funds, the Commission has asked Member States to develop the 'Prioritised Action Framework' setting out their funding priorities for the next period. These action frameworks will provide useful planning tools to strengthen the integration of Natura 2000's financial requirements into other relevant EU financial instruments. The aim is to ensure that Natura 2000 financing needs are clearly defined and as far as possible integrated into the action programmes for each of the key sectors, including rural and regional development.

A new enhanced LIFE Programme will also allow for a more strategic approach to effectively support integration and enhance the capacity of the responsible administrations to manage Natura 2000. This will be achieved by using LIFE as a catalyst to lever in other EU and domestic funds through promotion of a more programmatic approach particularly via the so-called "Integrated Projects".

#### **Reconciling Development and Nature Conservation**

The Natura 2000 network is an innovative nature protection instrument which fully recognises that man is an integral part of nature and the two work best in partnership with one another. Indeed, many sites in Natura 2000 are valuable precisely because of the way they have been managed up to now. In this way, Natura 2000 supports the principle of sustainable development and provides a great number of "green jobs". Therefore, any attempts to draw short-term revenues from unsustainable use of protected areas have to be weighed against long-term benefits that these areas provide to our societies. Once these benefits have been properly valued, it becomes obvious that protecting nature makes economic sense even in the times of crisis. Natura 2000 is the perfect tool to ensure that economic growth goes hand-in-hand with the need to protect and restore our valuable natural heritage.

There is no presumption against developments in and around Natura 2000. This must be assessed on a case by case basis. The Habitats Directive sets out a clear procedure to assess the impact of plans and projects on the conservation objectives of the Natura 2000 sites and to balance ecological and socio-economic needs in relation to individual developments. The aim, as far as possible, is to design projects that will not affect the overall integrity of the Natura 2000 sites and their conservation objectives. However, a necessary flexibility should be allowed, in certain justified cases and in

the absence of other reasonable alternative solutions, for damaging developments to take place. These must be offset by compensatory measures to ensure that there is no overall net loss of ecological values. The Commission Services have prepared guidelines on the relevant provisions of the Habitats Directive to assist Member State authorities in implementing these key provisions

Therefore, Natura 2000 from its foundation has not excluded economic development. But projects and plans must be assessed on a case by case basis in relation to the risk that they pose to the sites. There are many examples of economic developments taking place in and around Natura 2000 sites – such as the expansion of the ports of Rotterdam and Antwerpen, road and rail projects in Germany and Sweden, wind farm developments in the United Kingdom, power lines in Slovenia and elsewhere – where through careful planning and environment assessments it has proven to be possible to reconcile these goals with environmental protection.

The European Commission is working with different sectors that interact with Natura 2000 - such as wind energy, non-energy extractive industries, ports authorities, aquaculture, and inland waterways - in order to develop guidelines and promote good practice. One of the key lessons of these guidelines is the need for Member States to develop a strategic approach and take Natura 2000 into full consideration at the earliest possible stage in planning to avoid problems and delays during later project stages. Through good planning it will be possible to avoid many problems or conflicts and ensure that development is sustainable and not damaging to the environment.

#### **Strengthening Co-operation and Facing Emerging Challenges**

EU Nature Directives are addressed to the Member States and it is for them to define the necessary measures for their protected areas at national or regional level. The European Commission continues to promote co-operation and sharing of experience and expertise between countries. For example Commission guidelines on implementation of Natura 2000 in the marine environment have encouraged Member States to liaise with neighbouring countries in relation to cross-border sites. The EU also supports nature projects that have a cross-border dimension under the LIFE and INTERREG Funds.

It is essential to provide the right policy framework and incentives for those who own and manage Nature 2000 sites and other protected areas, so that they are rewarded for the services they provide. EU biodiversity objectives still need to be fully integrated into the Common Agricultural, Fisheries and Cohesion policy funds. To be truly sustainable national and EU policies like transport, energy, agriculture, forestry and land-use will have to fully embrace the protection requirements of Natura 2000 and wider biodiversity.

We will also need to increase our focus on new and emerging threats to nature, particularly from climate change. Even the most optimistic scenarios show that there will be real changes in our climate over the coming decades, with significant implications for the abundance and distribution of species. There will be a need to mitigate these impacts by reducing vulnerability, increasing resilience, and adapting management for species both within Natura 2000 areas and more generally across the landscape. Natura 2000 will remain essential to ensure that there is 'space for nature' in a changing world. Over time, the species and habitats present at any individual site may change, but the suite of sites in both the terrestrial and marine environment will remain safe havens for Europe's biodiversity. Natura 2000 sites will need to be protected and enhanced as part of the broader issue of managing the entirety of Europe's green infrastructure.

Nature needs our help, but it will pay us back many times over. Everyone has a role to play in making Natura 2000 and protected areas a success – be they public authorities, private landowners and users, developers, conservation NGOs, scientific experts, local communities or private individuals. This is the legacy of partnership that we should aim to leave for future generations.

## FROM DEATH ZONE TO LIFE LINE – 10 YEARS OF EXPERIENCES FROM THE EUROPEAN GREEN BELT INITIATIVE Uwe Riecken Karin Ullrich

**Abstract:** The European Green Belt is the area of the former Iron Curtain which divided Europe for around forty years into East and West. In the shelter of the border fortifications and areas with restricted access, nature could flourish and develop without much of a disturbance. As a result today we have a Green Belt running through Europe from the Barents Sea in the north to the Black Sea in the southeast. It is more than 12,500 km long and traverses eight biogeographic regions and 24 countries. From most of these countries, governmental and non-governmental organizations have joined the European Green Belt Initiative in order to protect the natural treasures along the Green Belt, including wilderness areas like vast forests, cultural landscapes, important water ecosystems and coasts as well as rare species like the European brown bear or the wolf.

In 2003 the first political conference on the European Green Belt was organised by the German Federal Agency for Nature Conservation (BfN) in Bonn with Mikhail Gorbachev, the former president of the USSR, as guest of honour. This was the starting point of the Initiative European Green Belt. The Initiative consists of national focal points for each country along the Green Belt, a number of NGOs out of which four are working as regional coordinators for the four regions of the European Green Belt. After 10 years a lot of achievements have been accomplished in different regions of the European Green Belt. On the other hand, a lot of challenges remain for future work. In this paper a brief overview on the four regions of the Green Belt, selected activities and projects, the history and future plans is given.

**Keywords**: Iron Curtain, European Green Belt, ecological network, green infrastructure, trans-boundary cooperation, natural heritage, memorial landscape

#### 1. Introduction

For more than 40 years an Iron Curtain divided Europe into East and West. This became true in Central Europe especially after the construction of the Berlin Wall in 1962 when this border became more and more non-traversable. Fences, mine fields, watch towers and effective border patrols formed a death zone with many victims consequent to their endeavor to cross this border and fleeing from the political situation in Eastern Europe. This situation also caused a strictly reduced

economic development of the border regions and in many places a decreasing human population. The only winner of this inhuman situation was nature. In the shelter of the border fortifications and areas with restricted access nature could persist and develop without much disturbance. As a result, today we have a Green Belt running through Europe from the Barents Sea in the north to the Black Sea in the southeast (Fig. 1). It is more than 12,500 km long and traverses eight biogeographic regions and 24 countries (Riecken et al. 2006). It consists of wilderness areas like vast forests, cultural landscapes, important water ecosystems and coasts and hosts a number of rare and threatened species like the European brown bear, lynx, and the European otter or the wolf (Schwaderer and Spangenberg 2006: 133-134; Schwaderer et al. 2009: 288-290).



*Figure 1 – The course of the European Green Belt* (http://www.europeangreenbelt.org/, 1 July 2013)

#### 2. The European Green Belt initiative – looking back at the first 10 years

In different parts of the European Green Belt the high ecological value of the border regions along the former Iron Curtain has been recognised even long before the fall of the Iron Curtain. In order to protect these regions cooperative activities across these borders have started at various points of time, e.g. in Fennoscandia (Karivalo and Butorin 2006: 44), Germany (Frobel et al. 2009: 399-403; Riecken and Finck 2012: 22-27; Riecken and Ullrich 2010: 19-22), the area of the transboundary National Park Lake Neusiedl-Fertö-Hanság (Kirchberger and Karpati 2006: 105-107, Knolle et al. 2009: 418-419) on the Austrian-Hungarian border and in the Balkan region (Schwaderer and Spangenberg 2006: 133-134).

The knowledge about the value of these border regions and the ensuing activities led to the idea to join them together as a European initiative in order to strengthen the regional efforts and to learn from each other. Thus, in 2003 a first political conference on the European Green Belt was organised by BfN in Bonn (Engels et al. eds 2004). At this conference Mikhail Gorbachev, the former president of the USSR and the president of Green Cross International, was present (Fig. 2) and it was possible to gain his support as a patron of the European Green Belt Initiative. Besides, other high-ranked politicians were present and gave support to the beginnings of the initiative, e.g. the former German minister for environment, and the former Russian and Czech Vice-Ministers for environment (Engels et al. eds 2004).



Figure 2 – Mikhail Gorbachev, the former president of the USSR and president of Green Cross International, as a guest of honour at the first pan-European Green Belt conference in July 2013 in Bonn (© U. Euler)

The first of the Pan-European Green Belt Conferences of the working group as a consequence was held in Sarród in Hungary in 2004. It was hosted by the Fertö-Hanság National Park which forms a transboundary national park together with the Lake Neusiedel National Park in Austria (Kirchberger and Karpati 2006: 105-107; Knolle et al. 2009: 418-419). This transboundary park is not only a best practise example for successful transboundary cooperation in nature conservation and sustainable development but it also contains the historic location of the Pan European Picnic, where in 1989 activists from Hungary and people from East Germany gathered and for the first time managed to break through the border fences, an important event preceding the fall of the Iron Curtain. Roughly 15 years after this event the participants of the conference visited this location, where they were joined by the former Hungarian minister for environment. During this conference, for the first time, a broad overview on the situation of the European Green Belt and the activities carried out by different governmental and non-governmental organisations was outlined. Two years later, the conference documentation was published by IUCN (Terry et al. 2006) as the first comprehensive publication on the European Green Belt.

The most important outcome of this conference was the set-up of a programme of work, listing direct actions needed for the implementation of the European Green Belt, giving a framework for an institutional structure and stakeholder participation and last, but not least, naming enabling activities needed as a basis for setting up and running the initiative (Anonymous 2006: 208-214). In the follow-up, many activities within the initiative were based on the implementation of this programme of work. From most of the 24 countries, governmental and non-governmental organisations have joined the European Green Belt Initiative in order to protect the natural treasures along the Green Belt. For each geographical region a regional coordinator has also been established (Table 1).

Region	Regional Coordinator
Fennoscandia	Association of Zapovedniks and National Parks of Northwest Russia, c/o Baltic Fund for Nature (BFN) St. Petersburg, RUSSIA, E-mail: bfn@bfn.org.ru
Baltic Green Belt (established as a new region in 2012)	Regional Association of BUND Friends of the Earth Germany in Mecklenburg-West Pomerania, Schwerin, GERMANY, E-mail: bund.mv@bund.net
Central Europe	BUND-Friends of the Earth Germany, Project Office Green Belt, Nuremberg, GERMANY E-mail: gruenesband@bund-naturschutz.de
Balkan	European Nature Heritage Fund (EURONATUR), Radolfzell, GERMANY, E-mail: info@euronatur.org

Table 1 –	The	regions	and	regional	coordinators of	of the	European	Green	Bei	lt
		<u> </u>		<u> </u>		~	1			

Since then quite a number of pan-European and regional meetings on the European Green Belt have taken place. These were very important to develop the initiative further but also to establish contacts across borders and regions and thus create a network between the various actors. This helped to further develop the initiative as such but especially to initiate transboundary and multinational projects. Here we will mention only two of the pan-European conferences which were connected to special events:

- In 2009 a conference was hosted in Linz in Austria when Linz was a European culture capital. At this occasion in the castle museum at Linz a newly built wing of the museum was opened with a large exhibition on the European Green Belt accompanied by a substantial catalogue (Wrbka et al. eds 2009).
- In 2010 a European Green Belt conference was hosted at Kuhmo in Finland connected to the 20<sup>th</sup> anniversary symposium on the Finnish-Russian Friendship Reserve (IUCN 2010).

The overall importance of the European Green Belt is documented by a mapping project which brought together all accessible information on protected areas along the entire Green Belt (IUCN 2007; Schlumprecht, Kreutz and Lang 2009). Today there are e.g. 40 national parks along the former Iron Curtain. 16 of them are transboundary or have adjoining national parks on the other side of the border (Fig. 3).



Figure 3 – Example of a map of protected areas along the European Green Belt (Schlumprecht, Kreutz and Lang 2009)

Very important multinational projects are INTERREG-projects funded by the EU, of which the current Greennet-project is already the third project (Marschall et al. 2012). All of these projects served not only to produce results focussed on the practical implementation of the European Green Belt, e.g. measurements to enhance sustainable regional development, to improve and implement an integrated Coastal Zone Management, to support Baltic Sea biodiversity and reduce eutrophication, or to integrate human activities with the natural environment in protected as well as non-protected areas. It showed that these projects were also extremely important for the evolution of well-functioning regional networks of actors, for streamlining ideas and approaches as the basis for a Corporate Identity of the Initiative and for an efficient public relations and lobbying work.

The INTERREG-project 'Baltic Green Belt' (Sterr et al. 2012) even led to the formation of a new sub-region within the European Green Belt Initiative, the Baltic Green Belt Region. Based on the importance of these projects for the initiative we hope that this kind of support of the EU will continue making future projects of this size and multinational dimension possible.

For the long-term success of the initiative and the advancements made in the protection and development of the Green Belt, various commitments made from the political to the practical level will be decisive. The additional historic and cultural dimension and significance of the initiative combined with a lot of public relations and lobbying work has led to great political support for the protection and development of the Green Belt in Germany by almost all parties. This was for example strongly expressed in a speech by the German Chancellor Angela Merkel in 2006 and is also documented by the coalition agreement of the following German government (http://www.cdu.de/sites/default/files/media/dokumente/091026-koalitionsvertrag-cducsu-fdp\_0.pdf, 3 July 2013) supporting the German and European Green Belt and having direct positive effects for practical work.

On 17 February 2010 for the most northern part of the Green Belt a 'Memorandum of Understanding on cooperation on the development of the Green Belt of Fennoscandia' was signed by the Ministry of the Environment, Finland, the Ministry of the Environment, Norway, and the Ministry of Natural Resources and Environment, Russia. This agreement aims at transboundary cooperation in terms of an ecologically, economically, socially and culturally sustainable development along the Finnish-Norwegian, Finnish-Russian and Norwegian-Russian parts of the Green Belt. Main focus has been laid on the cooperation between different scientific organizations, NGOs and administrations of different levels and here especially the administrations of the protected areas (Juvonen 2012).

The importance of the Green Belt initiative is recognised not only on a regional level but the European Commission in 2013 adopted a communication on the development of a Green Infrastructure for Europe (GI) (European Commission 2013). One proposed tool for the implementation are EU-level GI projects. As an example of such a project the European Green Belt Initiative was presented (European Commission 2013: 9-10).

Nature conservation in the Green Belt benefits from the high degree of political attention for the memorial of the former division of Europe. But on the other hand nature conservation offers an opportunity to keep this memorial alive.

The significance of the European Green Belt for nature conservation, the common heritage and memorial landscape may best be reflected by the interest it raises in other parts of the world outside Europe. Special interest in the Green Belt exists in the Republic of Korea due to the parallels existing between the European Green Belt and the Korean Demilitarised Zone, the so-called DMZ, a still existing strongly guarded border splitting the Korean peninsula. Based on this special interest in February 2012 the Governor Moon-soo Kim of Gyeonggi-Province, one of two South Korean provinces adjoining the Korean DMZ, and the president of BfN, prof. Beate Jessel, signed a declaration of intent on the future cooperation on the DMZ and the Green Belt (http://www.bfn.de/fileadmin/MDB/documents/presse/Declaration\_BfNGP\_23\_Februar.pdf, 3 July 2013).

This declaration has already been followed by various joint activities like the organisation of a workshop 'Sharing Benefits and Values from Transboundary Conservation' at the IUCN World Conservation Congress in Jeju, Republic of Korea, in September 2012 together with IUCN. In this workshop a special focus was put on the DMZ and the European Green Belt and the lessons that can be learnt from such transboundary initiatives (https://portals.iucn.org/2012forum/sites/2012forum/files/ wcc-tbc-workshop-leaflet-final.pdf, 3 July 2013).

#### 3. Targets of the Green Belt Initiative

Over the years the significance of the European Green Belt in various contexts became very obvious. This is reflected by the targets of the European Green Belt Initiative. These are to preserve the Green Belt as:

- backbone of a pan-European Ecological network which contributes to rendering Natura 2000 and Emerald Sites into a true network of protected areas and to the Green Infrastructure for Europe
- a common heritage and memorial landscape along the former Iron Curtain

- a model area for the conservation and restoration of a functional ecological network where also the economic, social, and cultural needs of local communities are respected
- a framework for cross-border cooperation on regional and municipal level as well as for protected areas
- a best practice example for successful cooperation of GOs and NGOs in a transboundary context
- a contribution to the cohesion of Europe and the consolidation of peace, and
- last, but not least, as a marketing instrument for nature conservation because of its historic and cultural dimension.

(Anonymous 2006)

### 4. Cooperation GO – NGO

Ever since the idea of setting up a European Green Belt initiative first came up, BUND (Friends of the earth Germany) and BfN have been closely cooperating in their work for the European Green Belt and soon have been joined in their efforts by many others. Among these, in addition to BUND, we want to especially mention EuroNatur, as both NGOs have engaged themselves strongly for the initiative and its development. Other important NGO partners along the Green Belt are e.g. IUCN (Belgrade office), Baltic Fund for Nature, and many other NGOs mostly working on a more regional or national level. These examples stand for the exceptionally good cooperation between GOs and NGOs in the European Green Belt Initiative in general.

#### 5. The 10<sup>th</sup> Anniversary of the Initiative

Ten years after the first conference in Bonn, which was the starting point of the initiative, a new political impulse was to be given by a high-level celebration. The main building of the German Ministry for Environment, Nature Conservation and Nuclear Safety in Berlin was chosen as a location. This building touches the line of the former Berlin wall. A modern extension of this historic building has been constructed over a remaining piece of the Berlin wall.

The 10<sup>th</sup> anniversary of the European Green Belt Initiative was celebrated with three international events on 15 and 16 May 2013 in Berlin, Germany. On 15 May 2013 the German Federal Ministry for Environment in cooperation with BUND, EuroNatur and BfN celebrated a ceremonial act. During this ceremony several ministers,

ambassadors and representatives of the 24 states adjoining the Green Belt received a Green Belt award for their commitment and as incentive to strengthen the activities for the Green Belt (Fig. 4). The price was awarded by BUND and EuroNatur on behalf of the Coordination Group of the European Green Belt Initiative. Several of the appointed representatives underlined their political will to support the pan-European initiative: an official Joint Declaration of Intent was signed by eleven states during the event. In the follow-up four additional countries signed the declaration during a second signing ceremony on 4 September 2013 and other Green Belt countries announced already that they also intended to sign the declaration.



Figure 4 – Representatives from the Green Belt countries receiving the Green Belt award during the official celebration of the 10<sup>th</sup> anniversary of the European Green Belt Initiative (Berlin, 15 May 2013. Photo: Sascha Hilgers)

In the evening of 15 May about 90 people, stakeholders of the 24 European Green Belt countries, and a delegation from South Korea met at the GreenNet Evening Reception<sup>1</sup> in the history-charged Berlin Wall Memorial. The reception was dedicated to deepening international cooperation and exchange.

The anniversary celebrations were followed by an international symposium on 16 May in the German Ministry for the Environment, jointly organised by BUND, EuroNatur and BfN. Janez Potočnik, European Commissioner for the Environment, welcomed the participants via video message and pointed out the great potential of the European Green Belt for building a green infrastructure across the continent.

<sup>&</sup>lt;sup>1</sup> Organised by BUND within the Central European INTERREG project "GreenNet - Promoting the ecological network in the European Green Belt", co-financed by ERDF.

In the course of the conference, presentations were given about achievements realised so far, but also future challenges and perspectives of the Green Belt Europe were discussed; an outlook on the process of developing the Korean DMZ into a UNESCO biosphere reserve was also explored against the background of the European experiences (http://www.europeangreenbelt.org/news/single/article/10th-anniversary-of-the-european-green-belt-initiative-1.html, 2 July 2013).

#### 6. Future Perspectives

During the first few years IUCN with its regional office for Europe in Brussels operated a Green Belt secretariat, which was later on located in Belgrade. In 2010 this secretariat was closed due to structural changes in the organization of IUCN and due to the lack of financial support. In 2011 a research and development study was launched by BfN (http://www.bund.net/themen\_und\_projekte/gruenes\_band/gruenes\_band\_europa/der\_bund\_am\_gb\_europa/initiative\_gb\_europa, 15 July 2013) to develop ideas on how to establish a sustainable structure for the initiative and a sustainable financial foundation. The first outcome of the study was the implementation of a coordination group which consists of twelve persons, coming from the four regions, each represented by the regional coordinator, one national focal point and one NGO. The main tasks of this group are to assist the scientific project, discuss the results, organize the pan-European meetings and represent the Initiative towards the public and decision-makers e.g. in the EU.

Projects are of course nice to have and so far formed a very important basis for the work on the European Green Belt. However, other developments, like the conservation status of an area or region can have great implications for its protection and development. With regard to the European Green Belt the question whether it could be nominated as a world heritage site and might profit from this was brought up repeatedly in the past. As experiences with the nomination of other world heritage sites showed, it is not easy to fulfil the UNESCO criteria for a world heritage site and always leads to a very complicated and demanding process. This induced BfN to commission a feasibility study on the suitability of the European Green Belt or of parts of it for a nomination as world heritage site (http://www.bfn.de/0310\_steckbrief\_welterbeindeu.html). In this study various scenarios are to be created and checked including the advantages that might arise for the Green Belt but also the efforts that would be needed to achieve this goal. The results of this study expected for summer 2014 are explicitly to be unbiased and will be shared with the Green Belt community.

For the future the initiative will try to fulfill the targets documented before and therefore wants to:

- set up a lean but sustainable organization structure
- develop and install a sustainable financial foundation for the initiative
- enhance public relations and lobby work, e.g. by publications, webpage, new social media but also by direct contacts to national and international decision-makers like the EU commission
- implement new transboundary projects (like the INTERREG-projects) for different regions
- help to establish new protected areas along the Green Belt and to improve the management quality of existing ones, and
- strengthen national and regional NGOs by the means of projects and activities focusing on capacity building.

Based on the very successful cooperation between the different stakeholders of the Green Belt initiative we are very optimistic that these targets will be met in the future.

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## PROTECTED AREAS MANAGEMENT WITH (SUBCONSCIOUS) SOCIAL RESPONSIBILITY

### Matjaž Mulej, Amna Potočnik, Simona Šarotar Žižek, Anita Hrast, Nastja Mulej

**Abstract**: Protected areas warrant holistic management to benefit their population and protect their natural attributes. The application of the concept 'Innovative Regional Agency' using Dialectical Systems Theory and/or Social Responsibility may help. Differences in interests and views may be controlled productively in combination with USOMID and 'Six Thinking Hats' methods. Efficiency can be measured with criteria in the Horus Award.

**Keywords**: Horus Award, Innovative Regional Agency, protected areas, social responsibility, USOMID-cum-'Six Thinking Hats'

#### The Selected Problem and Viewpoint

Protected areas are parts of nature; their strata is not subordinated to industrial or other developments that focus on the profit-oriented use and abuse of nature, forgetting about the needs of the coming generations. This means that protected areas are very important and can have a positive influence from the viewpoint of sustainable future (see Ećimović 2013:108-109 and earlier). Equally significant, although less acceptable from the short-term economic benefit angle for the people living in areas such as Natura 2000 (covering quite big areas of Slovenia), national parks, such as Goričko (in the north of Prekmurje, the most North-Eastern area of Slovenia), and trying to give up the traditional ways of life. Thus the question arises: how can the two extremes of sustainable future and short-term economic benefits be handled in beneficial synergy? The authors do not intend to provide any final answer to these issues, but only offer model criteria for decision-makers to figure out how such decisions can be taken with greater holistic approach that may lead a way to avoid crucial oversights and their dangerous consequences. The authors base upon the criteria they have introduced in their questionnaire for the candidates of the Horus Award for social responsibility who are asked to analyse their own (business) practice. The authors will try to apply these methods to the regional development issues<sup>1</sup>, since protected areas can be viewed as specific regions. Our method is the Dialectical Systems Theory (DST) (Mulei 2013 and earlier, since 1974).

<sup>&</sup>lt;sup>1</sup>This contribution is the next step after: Potočnik et al. 2013.

#### 1. Dialectical Systems Theory (DTS) and Regional Development

Mulej's DST (Mulej 1994, 1998, 1999, 2000, 2001, 2006, 2007, 2008) made the dialectical system concept (instead of a General System Theory - Bertanlanffy 1968) methodologically supported by a system of three elements and three relationships, in general. They are supposed to influence humans as observers, thinkers, decisionmakers, and decision implementers, as well as help them attain the requisite holism of their behaviour to enable the best possible results. Success is thus attained with no excessive effort and no crucial lack of insight and influence; this requires a wellmanaged process in which all crucial steps, interdependences and synergies are carefully considered. In order to attain such a success, human attributes of both decision-makers and decision implementers must support creativity and requisite holism with the co-operation of complementary professionals. In this effort, it helps a lot, if application of theory can take place in an informal style. This is why there are three relationships and three elements in the DST as a dialectical system: all of them are both essential and sufficient: in other words, DST matches criteria of requisite holism. The three DTS laws and components applied to the regional development are shown below.

The law of requisite holism (it demands the author/s of the definition of a system representing the object under their consideration and/or control to clearly state what part of attributes of the object is included into their system; this is the mental picture of the object under consideration and/or control; one must do one's best to fight over-simplification by all available/crucial knowledge and skills as well as by ethics of interdependence).

The law of requisite holism as applied to regional development, shows that the space-based policy (Barca 2010) in which a region is described as three spatial and one time components is not sufficient to describe the region in the terminology of the 21<sup>st</sup> century; the region, under such scenario, is seen as a nexus of individuals which on the aggregated level can be described in terms of well-being and can be measured with objective and subjective indicators. In the same context the regional development plans as the strategic plans of regional development are complex in nature and even in mathematical terms. However, sustainability which is still understood as the leading objective of regional development is divided into environmental, economic and societal development. Under such dispensation, the institutional aspects are usually left out. Even if all four strands are taken into account, the same challenges (as the development issues are) are viewed from too narrow viewpoints. This problem is not solved with the so called horizontal measures such as innovativeness, gender mainstreaming, etc. What should be done is to overcome the »silos« approach and start thinking in the trans-disciplinary teams, if the new and

creative outcomes should be found for all the challenges that regional inhabitants judge as important (whether from the cognitive or the emotional viewpoint)? We should not neglect the fact that the convergence (in macro-economic terms – Barro and Sala-i-Martín 1991; Barro 1991, Baumol 1986, Baumol et al. 2007) is neither seen between the states nor between the regions (in case of Slovenia the regional divergence is constantly increasing despite the regional policy proclaiming to act in favour of the less-developed regions.<sup>2</sup>

*The law of entropy* (it reflects the reality in which there is a permanent tendency toward destruction, which demands requisite holism and innovations permanently; the latter ones have conditioned survival since the times humankind has given up human's adaptation to nature).

The law of entropy warrants humans to consider, think, and rethink: induce changes or changes will be hindered; how we attempt to attain the equilibrium. In the first case we strengthen them, in the second we try to suppress them, and in the third we try to minimise their impact. Why do holism and innovation as human attributes matter? With both of them we can act against the entropy. Although innovation should not be limited to small technical and technological novelties elaborated without the formal duty, the innovations are still described and interpreted in those terms - although the EU definition (European Commission 1995; 2000; 2009) prescribes that innovation is every novelty proven as beneficial in praxis (and only such) (Mulej 2008).

Is the competitiveness 'sine qua non' of development (state, regions, municipalities, individuals...)? If the development is the flow of consciousness (either individual or collective) that could be obtained from the activities of individuals/organizations/ society, then the competitiveness is only one of the possible modes, sources and viewpoints of possible development; the current crises from 2008 on shows such an approach is a blind alley. In the context of development, innovativeness could be defined as constant intention of spirit/thought/values striving for newness (usefulness is the measure set by the European innovation policy as criteria for justification of the public funds spent). If the intention for people to look out for newness is the smallest common denominator of the human being and doing, then in the regional development all three components have to be taken into account:

• organisational (with the question: is the organisation that should be liable for

<sup>&</sup>lt;sup>2</sup> Zakon o pospeševanju skladnejšega regionalnega razvoja, Ur. I. SRS, 29/1972. Zakon o spodbujanju skladnega regionalnega razvoja (ZSRR), Ur. I. RS, 60/1999. Zakon o spodbujanju skladnega regionalnega razvoja (ZSRR-1) Ur. I. RS, 93/2005. Zakon o spremembah in dopolnitvah Zakona o pospeševanju skladnejšega regionalnega razvoja v SRS, 24-1100/76; 30-1466/80; 33-1372/85; 16-775/86; 28-151/88).

regional development innovative enough to play the role of regional impulsemaker?)

- processes (if anything, and what, is changing with the introduction of single measures aimed at enhancement of regional development programs?); and more important
- how the different components of the society/individuals are included in the development or products/services (of which the regional development policy is part)?

Speaking in DTS terminology the innovation is described not as a sum but as synergy. Which of the factors mentioned below may be zero?

Innovation = (invention X entrepreneurship and entrepreneurial spirit X requisite holism X management X co-workers X innovation-friendly culture X customers X competitors X suppliers X natural environment X socio-economic environment and other outer, i.e. objective conditions X random factors, such as luck).

None; thus, we see a long and complex way from idea via invention to innovation/ new benefit. 'Agency for Regional Innovation' that acts in socially responsible way should take care of such needs. Now, the issue is what the criteria are for Agency's working. Let us summarise our findings and suggestions (Potočnik 2010).

## The first organisational and content-based steps concerning the regional development agencies

The first step the regions can make to reorient development (at least in Slovenia) is to change the nature and tasks of regional development agencies (12 development regions in total, but without legislative power). Therefore we propose the model that could be applied to all regions called ARI (Agency for Regional Innovation).

Slovenia has a heavily centralised organization (all important functions and funds) and on the other hand it is explicitly dispersed without holism. Regional development policy must become trans-disciplinary; it cannot be in charge of the economic development only, but also of spatial, environmental as well as societal dimensions, not neglecting the institutional set up (of its working). Regional development agencies, in the coming years, have to be transformed into agencies for regional innovation (ARI).

The tasks of ARI shall become:
- Mediator and mutual connector of innovation potentials in regional community. It shall become a nexus of the network that includes inventors, innovators and others that encourage new, useful and beneficial for the region and all its stakeholders. ARI shall act on local, regional, and international levels by networking domestic and foreign knowledge by searching for new answers to the local needs (and not only global or national problems).
- ARI shall introduce new and useful ideas for local/regional society that are going beyond technical and scientific inventions into non-technological ones.
- ARI shall use the innovative technologies, including the e-Science, virtual reality, simulation techniques, so that it will not only inform but also introduce innovative changes into its e-regional community.
- ARI shall shape the innovation policy on local, regional and other levels by unleashing the potentials of public sector and public services and sponsoring their cooperation with business and future to-be businesses. The innovation metrics shall be aligned to the needs; innovativeness of public services shall be shown, documented and validated, etc.
- ARI shall promote social responsibility of the local and regional companies so that they can become the sounding board of the customers, their requirements as well as a base for experts' discussions about what the customers expect from the producers. ARI can contribute to the social responsibility by revealing the cognitive preconditions needed for innovation: from interdisciplinary creative cooperation, basic creativity, problem detection and solution, interpersonal skills to management, on one hand, and risk taking to provocation, initiative taking and facing with problems as typical innovators' attributes, on the other hand.
- ARI shall contribute to socially responsible public procurement by requesting the green and innovation policy from the suppliers or the service providers: only the most socially responsible with total quality consciousness and systemic quality supplier-networks shall be eligible.
- ARI shall become research and development institution for its region. ARI shall prepare pilot projects that may impact the regional level of economy and the quality of life and its people, taking into account social responsibility.
- ARI shall not be only a propaganda machine for the mayors but shall serve broader societal interests reaching beyond local politicians, be a place to meet, prescribe and decide for companies, NGOs, research and educational institutions. Therefore it shall become the engine of innovative and socially responsible changes in the regional community.

Thus, the core of ARI shall consist of regional innovation and its diffusion. The social responsibility is part of the societal innovation, and more; it is part of the broader concept, namely, sustainable development and its future. How shall the social responsibility be seen in the projects of ARI? Let's add to the cited parts of (Potočnik et al. 2013) criteria summarised in the Horus award.

## Overview of the Criteria of Social Responsibility in the 'Horus Award'

The general perception of the Horus award (<u>www.horus.si</u>) in organisations tackling the protected area, which ARI should use when deciding what and who to support, includes:

1. How is SR understood and realised (several answers can be provided and proofs added)?

The following is outlined beyond limits of legislation:

- > Encouraging work climate and circumstances are provided to coworkers. E.g.:
- > Honesty without abuse of impact toward other business partners is normal. E.g.:
- Honesty without abuse of impact toward other broader society is normal. E.g.:
- Natural preconditions for human life are treated carefully. E.g.:
- ➢ Effort aimed at total quality and business excellence is normal. E.g.:
- Efforts aimed at holism without serious oversights at work are normal. E.g.:
- Charity for the needy ones without abuse of impact is practiced. E.g.:
- Efforts for world peace are practiced. E.g.:
- > Efforts aimed at diminishing of avoidable consumption are practiced. E.g.:
- Products and services with the smallest possible harm to nature and waste are practiced, so is recycling. E.g.:
- Other efforts of practicing SR. E.g.:
- 2. Ethical behaviour practicing of formal and informal efforts aimed at ethical behaviour:
- 2.1. Which practice is found ethical?
  - Benefit/profit for owners only;
  - > Consistent realisation of work-related legislation, but nothing additional;
  - > Meeting interests of as many stakeholders as possible;
  - $\succ$  Other ways.
- 2.2. Is unethical behaviour tolerated in practice?
  - Never rarely sometimes frequently

- 2.3. How frequently do managers and coworkers talk about problems of ethical behaviour?
  - Never rarely sometimes frequently
- 2.4. Are stories about persons who work ethically diffused? - Never - rarely - sometimes - frequently
- 2.5. Do your coworkers discuss ethical issues? - Never - rarely - sometimes - frequently
- 2.6. Are the basic values formally written? Yes no If yes, in which documents?
  If no, why so? – No need – no knowledge – other reasons
- 2.7. Do statements on mission and policies include ethical orientation? If yes, in which documents? If no, why so? – No need – no knowledge – other reasons
- 2.8. Is there ethical codex?If yes, in which documents?If no, why so? No need no knowledge other reasons
- 2.9. Are coworkers rewarded for role-modelling of ethical behaviour?
  Never rarely sometimes frequently
  If yes, according to which documents?
  If no, why so? No need no knowledge other reasons
- 2.10. Is unethical behaviour punished?
  Never rarely sometimes frequently
  If yes, according to which documents?
  If no, why so? No need no knowledge other reasons
- Incorporation of social responsibility in the organisational strategies and its matching the international guidelines:
- 3.1. Is there a strategy of social responsibility?
- 3.2. Is the strategy of social responsibility a part of the general strategy?
- 3.3. Are key areas of social responsibility identified? Which ones (from ISO 26000)?
- 3.4. Are any areas of social responsibility neglected? Which ones and why?
- 3.5. Are the key stakeholders involved in strategy of social responsibility? How?
- 3.6. Are UN Global Compact Principles known?
- 3.7. Are UN Millennium Goals known?
- 3.8. Are GRI principles of reporting about SR practiced?

3.9. Are OECD guidelines or any other international guidelines on SR practiced? 3.10. Are ISO 26000 guidelines on social responsibility practiced?

4. Insight into activities by fields of practicing social responsibility:

4.1. Which ones of the listed activities are practised in organisations tackling the region?

## a. Ecology and sustainable development/future:

- > One applies certificate on sustainable treatment of one's environment.
- One produces/supplies environment-friendly products/services and considers their potential environmental influences.
- > One develops / produces / supplies healthy and natural products/services.
- One develops / produces / supplies products/services with direct contribution to solving environmental and other social problems.
- > One diminishes and/or recycles packaging and advises customers about it.
- ➤ One separates waste.
- One reduces waste.
- One uses energy from renewable sources.
- > One saves energy for heating and illumination.
- ➤ One saves water.
- > One considers the said socially responsible efforts in research and development.
- One joins shared agreements on sustainability efforts (recycling, accepting used packaging, if it is re-usable, etc.).
- One cooperates with partners/suppliers in logistics to reduce CO<sub>2</sub>, emissions, etc.
- One has internal codex on environmental protection and reduction of environmental impacts; it is practiced.
- > Other efforts, e.g.:

## b. Labour relations:

- > Coworkers receive suitable payment for their work.
- > Internal codex on culture/ethics in mutual relationships exists and is practiced.
- > Coworkers are offered rewards matching their results and additional training.
- > Coworkers receive suitable information.
- > Coworkers receive healthy meals on job.
- > Mothers of babies receive special conditions at work.
- > Efforts for easier coordination of work and family life are practiced.
- > Efforts for protection of elderly coworkers at work are practiced.
- > Professional promotion of women is encouraged.
- > Persons from vulnerable groups are employed (other nationalities, handicapped,

youngsters, long-term unemployed people, etc.).

- Multicultural organisational climate with tolerance toward differences is encouraged.
- Coworkers' caring attitude toward their own health is encouraged and special benefits are offered for it (recreational breaks, tickets for swimming pools, gyms, sport clubs, etc.).
- > There are vocational capacities at affordable prices.
- Coworkers are encouraged to develop their skills and long-term professional training.
- Innovation is encouraged; coworkers' suggestions for improvement of work organization or production process, etc., are encouraged.
- > Other efforts aimed at similar goals.
- c. Encouragement of coworkers' personal engagement for community work:
  - > Coworkers are encouraged to suggest socially responsible projects/activities.
  - Coworkers are encouraged to get actively involved in volunteering / charity organizations.
  - Coworkers receive their usual pay for the days when they work in volunteering / charity organisations.
  - Managers are role models to employees with their socially responsible behavior (e.g. involved in various volunteering / charity organizations or projects of SR).
  - ➤ Other efforts, e.g.:
- d. Relationships with customers and suppliers:
  - Customers are made aware of sustainable attitude toward environment and safe/sustainable use of products and services.
  - Suppliers with active social responsibility policy are favoured.
  - Suppliers and other business partners are offered help in realization of the SR principles.
  - Supplies from 'Fair-trade' chain are favoured.
  - ➤ Ingredients of products are marked correctly and fairly.
  - Advertisement of products and services does not mislead customer; promises are kept.
  - > Advertisement and communication is honest.
  - > Instead of business gifts money is donated to charity purposes.
  - > Suppliers are paid regularly and in time.
  - > Internal codex of behavior toward business partners exists and is practiced.
  - ➤ Other efforts:
- e. Relations to the local and international social and business environment:

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- Policy of honesty and total quality of contract, business and advertisement is practiced.
- Local coworkers are employed as much as possible.
- > Local suppliers are favoured, if matching criteria of systemic quality.
- > Project that benefit the local community are actively supported.
- Projects helping the less developed areas of the country/world are actively supported.
- > Groups and persons with special needs are supported.
- > Non-governmental organisations are actively supported.
- > At least one local or national sport, culture or charity organization is supported.
- ➤ Money, products, material, services, etc., is provided for charity purposes.
- > In marketing action a part of means is provided for charity purposes.
- Unpleasant, sensitive and conflicting topics are openly discussed with local community.
- Active involvement into international SR projects, such as charity for the needy, is practiced.
- > Other efforts:

4.2. Brief description of the above-mentioned actions (content, phase of implementation process, success, budget, etc.):

# 5. Action plans and key success factors:

- 5.1. Action plans or projects for socially responsible actions exist. E.g.:
- 5.2. Indicators of their successful implementation are monitored. E.g.:
- 5.3. These indicators are clearly linked with business objectives. E.g.:

5.4. Implementation of the SR strategy and related action plans is supported with sources. E.g.:

- 6. Ways of involvement of stakeholders in SR actions (coworkers, partners, owners, local and other government, NGOs, ...) concerning the:
- 6.1. Topics of ecology and sustainable development/future. E.g.:
- 6.2. Involvement of coworkers. E.g.:
- 6.3. Cooperation with customers. E.g.:
- 6.4. Cooperation with organization in your local and broader environment. E.g.:
- 6.5. Documents on results of these kinds of cooperation. E.g.:
- 7. Communication of social responsibility:
- 7.1. Investment into communication of SR: amount, ways of decision about it. E.g.:
- 7.2. Ways of communication of the SR activities. E.g.:
  - Media relations
  - ➢ Events

- ▶ Brochures, etc.
- Advertisement
- Website presentations
- Social media
- Internal media
- Yearly reports
- ➤ Others, e.g.:
- 7.3. Responses by the stakeholders to the SR activities. E.g.:
- 7.4. Growth of innovation along with the SR activities and communication of them. E.g.:
- 7.5. Growth of efficiency of communication due to inclusion of SR in business practice. E.g.:
- 8. Socially responsible investment:
- 8.1. Criteria of SR investment:
  - Sustainability (protection of natural environment, of animal rights, etc.). E.g.:
  - Society (protection of consumers' rights, of human rights, ethnical and religious diversity, etc.). E.g.:
  - Economics (profitability of investment, including social and environmental needs). E.g.:
  - Responsible management (structures and mechanisms disabling abuse of influence and enabling suitable financial and other conditions to coworkers). E.g.:
- 8.2. Approaches in selection of the SR investment:
  - ➤ Topical choice of industries, such as renewable energy. E.g.:
  - Screening choice of any industry based on a list of criteria. E.g.:
  - Proactive: long-term criteria. E.g.:
- 8.3. Cases of the SR activities and projects invested in during the recent year.
- 9. Reporting about the SR activities:
- 9.1. Ways, frequency and addresses of reporting about SR. E.g.:
- 9.2. Inclusion of reporting about SR in the usual business report. - Yes - no - separate
- 9.3. Inclusion of accountancy data on investment in SR in report. - Yes - no
- 9.4. Consideration of GRI guidelines (Global Reporting Initiative). – Yes – no

Attachment of the yearly business report is obligatory here.

10. Certificates, awards, recognitions, memberships concerning SR. E.g.:

In addition to Horus, let it be recalled: several professional organisations have their codex close to SR (Šarotar Žižek et al. 2012; Hrast and Kojc 2013) that might also be helpful.

## Some Conclusions and Suggestions

To attain their (total) quality, sustainable protected regions should meet the criteria described in Table 1.

*Table 1 – Sustainable protected region's basic aspects and main criteria of its quality level* 

Aspect	General Criteria
Economic imperative	Competitiveness
Ecological imperative	Habitability
Social imperative	Community
Ethical imperative	Legitimacy
All aspects	Combined criteria in synergy

These needs require sustainable enterprises located in a sustainable protected region to conceive, formulate, and use requisitely holistic criteria, and to evaluate their business critically. Table 2 summarises some basic criteria to evaluate sustainable enterprises' business from some critical viewpoints.

Table 2 – Basic criteria to evaluate sustainable enterprises

Criteria Aspects	Individual Performance Criterion	Corporate Performance Criterion	Societal Performance Criterion	Global Performance Criterion
Economic Imperative	Individual prosperity	Corporate profitability	Societal wealth	Global wealth
Ecological Imperative	Individual eco- efficiency	Corporate eco- efficiency	Societal eco- efficiency	Global eco- efficiency
Social Imperative	Individual quality of life	Corporate reputation	Societal quality of life	Global quality of life
Ethical Imperative	Individual values	Corporate values	Societal values	Humankind values
All aspects in synergy	Individual sustainable life index	Corporate sustainable behavior index	Societal sustainable development index	Global sustainable development index

Hence, a sustainable enterprise, be it in production, agriculture, or services, in a protected region attains the highest level of requisite holism and destroys the human condition for survival the least of all enterprises. A sustainable enterprise does not only command with the most modern and comprehensive knowledge, but uses values, culture, ethics and norms (VCEN) that allow sustainable enterprises to do no harm or to do the least harm, such as sustainable VCEN resulting from sustainable development/future principles.

Social responsibility adds the VCEN of interest of enterprises to do more than the law requires officially, because it helps them outcompete the others by more requisite holism of their approach and wholeness of their outcomes. Methodologically, combing the '6 Thinking hats and USOMID' as summarised in Tables 3 and 4 can help governors and managers run their region and organizations with requisite holism and hence successfully (Mulej and Mulej 2006):

Table 3 – The essence of each of the six thinking hats (applied in phases; all participants use the same hat at the same time in the same phase, and then switch to another hat)

- White = neutral, objective, facts without interpretation, like a computer
- Red = feelings, emotions, intuition, irrationality, unproved feelings, no justification
- Black = watching out, caution, pessimism, search for danger, doubt, critique; it all works well against mistakes and weak points of proposals
- Yellow = optimism, search for advantages of proposals, search for implementation ways, sensitivity for benefit of the idea, constructive approach.
- Green = energy, novelty, creation, innovation, in order to be able to overcome all obstacles;
- Blue = organization, mastering, control over procedure, thinking about thinking.

S	REDIM Phases USOMID Steps Inside SREDIM Phases	1. Select problem /op- portunity to work on in an USOMID circle	2. Record data about the selected topic (no 'Why')	3. Evaluate recorded data on the topic ('Why is central')	<ol> <li>Determine and develop chosen solution(s) to the topic</li> </ol>	5. Implement chosen solution to the topic in reality	6. Maintain implemented solution for a required long term
(	1. individual brain-writing by all in the organisa-tional unit/circle	All 6 hats	White hat	All 6 hats, red, black, yellow, green first of all	All 6 hats, red, black, yellow, green first of all	All 6 hats in preparation of imple- mentation	All 6 hats in preparation of mainte- nance
a	2. Circulation of notes for dditional brain- writing by all	All 6 hats	White hat	All 6 hats, red, black, yellow, green first of all	All 6 hats, red, black, yellow, green first of all	All 6 hats in preparation of imple- mentation	All 6 hats in preparation of mainte- nance
3. id	Brain-storming for synergy of eas/suggestions	All 6 hats	White hat	All 6 hats, red, black, yellow, green first of all	All 6 hats, red, black, yellow, green first of all	All 6 hats in preparation of imple- mentation	All 6 hats in preparation of mainte- nance
co	4. Shared inclusions of the circle	All 6 hats	White hat	All 6 hats, red, black, yellow, green first of all	All 6 hats, red, black, yellow, green first of all	All 6 hats in preparation of imple- mentation	All 6 hats in preparation of mainte- nance

*Table 4 – The synergy of USOMID/SREDIM and six methodologies in the procedure of USOMID* 

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# ELECTROMAGNETIC SENSING AND NATURE PARKS Aleksander Zidanšek, Andreja Abina, Anton Jeglič, Uroš Puc

Abstract: Electromagnetic sensors allow for the detection and localisation of hidden underground objects. A multisensory remote-controlled mobile robotic system has been developed at Jožef Stefan International Postgraduate School, which comprises ground-penetrating radar, LIDAR (Light Detection and Ranging), optical camera, magnetometers, and continuous wave electromagnetic induction sensor. The system is capable of automatic three-dimensional mapping of selected areas as well as of the detection of underground objects and structures. National parks provide a plethora of opportunities for applications of electromagnetic sensors. Some examples are presented in this paper.

Keywords: Nature parks, electromagnetic sensors, ground-penetrating radar

## Introduction

Electromagnetic sensors are capable of collecting information about the position, shape, structure and composition of hidden objects on the surface as well as underground. Active electromagnetic systems emit electromagnetic radiation towards the objects of interest and measure the response. Passive electromagnetic sensors measure the response of the objects from the natural background electromagnetic fields. Such sensors can be used for non-destructive three-dimensional mapping. Optical cameras, infrared cameras and LIDAR are primarily intended for surface mapping, continuous wave electromagnetic induction sensor can detect metallic objects up to 1m underground, ground-penetrating radar detects signals from several meters underground, and magnetometers detect metallic objects at even larger depths (Cracknell and Hayes 2007; Daniels 2009).

## **System Description**

Jožef Stefan International Postgraduate School (MPŠ) research group developed a multisensory remote-controlled mobile platform, which comprises groundpenetrating radar, LIDAR, optical camera, magnetometers, and continuous wave electromagnetic induction sensor, shown in Figure 1.



Figure 1 – MPŠ multisensory remote-controlled mobile platform

## **Applications of Electromagnetic Sensors in Rural Landscapes**

The rural cultural landscapes represent very complex cultural and natural heritage (UNESCO 2013). Cultural landscapes are parts of the changing world of people and society. The ever-recurring change throughout the human history warrants archaeological investigations to understand cultural and natural landscapes. However, the protection of such heritage requires active participation of stakeholders in its development and change as well as reliable information about the structure of the area from different sensors. Therefore, landscape management and planning are useful tools, which require strong support from different technologies for measurement, detection, localisation and mapping of such areas. Developing ways of ensuring that public views and perceptions are capable of influencing the development of landscape's future is therefore vital to the success of the sustainable landscape management. This requires landscape assessment using different and complementary non-invasive and extensive methods, including remote sensing and geophysics. Large quantities of collected data require the development of an intelligent workflow for processing, integrating, managing and disseminating data.

Landscape assessment and management are usually carried out by different institutions, with experts working in different disciplines using different tools and

approaches and collecting large sets of complementary data. The interdisciplinary dimension of the cultural landscapes is very important because the approaches of various disciplines differ substantially. However, such differences are not an obstacle because diverse views complement each other producing important added values. Thus, one of the major challenges is the integration of large sets of data to produce comprehensible maps that can be used for mapping, assessing, raising awareness in management and negotiation of the rural cultural landscape heritage. Usually, only individual historical or archaeological sites are explored due to easier data acquisition and interpretation.

Hence, the multisensory system is useful as it allows inspection of large areas and handling of large data sets in a short time. Treatment and managing of these areas demand interdisciplinary and transdisciplinary approach and thus help in integrating local knowledge of people, who live there, with the history and culture of the region.

## **Opportunities for National Parks**

National parks include large areas of natural and man-made landscape, which continues to change throughout history. Old settlements are often buried underground, and their excavation is both slow and expensive. Remnants of buildings, underground tunnels and similar constructions are excellent examples for application of ground-penetrating radar, which can detect and localise them up to several meters below the surface. This reduces the need for excavation to only a few detected target sites. The MPŠ multisensory robotic platform offers automation of the measurement process (4). After the platform receives the definition of the target region, it performs the measurement without the need for human presence. A typical example of the measurement with the MPŠ multisensory robotic platform is shown in Figures 2 and 3.



Figure 2 – Detection of metal objects buried under 30 cm of sand

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Figure 3 – Reconstruction of a three-dimensional image obtained by LIDAR

In addition to searching the buried man-made artefacts, ground-penetrating radars are also capable of finding underground infrastructure such as water and sewage pipelines, electricity and other cable infrastructure. They are also useful for the detection of electric and water lines in the walls of the old buildings.

Natural objects also provide many opportunities for applications of the groundpenetrating radar. Age and health of the trees in the forest can be estimated from the shapes inside the trunk which can be obtained by drilling inside the tree. The ground-penetrating radar provides a non-destructive alternative for obtaining the same information.

# Conclusion

MPŠ multisensory mobile robotic platform offers many opportunities for assistance in the management of national parks. Typical examples of the ground-penetrating radar applications include:

- three-dimensional mapping of the underground archaeological artefacts
- three-dimensional mapping of the water, sewage and electricity infrastructure
- non-destructive imaging of trees, and
- detection of electric and water pipelines inside the buildings.

The system is autonomous so that it can be programmed to function without the need of human guidance. It is also flexible, so that in case of special needs new sensors could easily be added to the platform.

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# DEMOGRAPHIC DEVELOPMENT IN THE GORIČKO NATURE PARK: HOW TO COPE WITH AGEING AND DECLINING POPULATION Janez Malačič

**Abstract:** The nature of the demographic processes and structures in the Goričko Nature Park (GNP) is determined by the modern demographic regime prevailing in advanced countries as well as by the economic underdevelopment and deprivation of the Goričko region. Due to statistical reasons the population of the GNP is analysed on the basis of the data for eleven municipalities which completely or partially occupy the territory of the GNP. In 2012, the estimated population of the GNP represented 1.3% of the population of Slovenia. Population decline, low fertility, emigration and fast population ageing have been the most prominent demographic characteristics in the GNP for more than a century. More recent demographic development has been determined mainly by low level of economic development. Policy measures for demographic, economic and social recovery of the Goričko region are still missing. Much faster economic development in the region is needed. The institution of the GNP, broader cross-border regional cooperation, EU regional and cohesion funds and foreign private investments as well as Slovenian government policies should considerably contribute to the future advancement of the Goričko region.

**Keywords**: demographic development, Goričko nature park, Prekmurje, ageing and declining population

## 1. Introduction

Goričko geographic region is a hilly part of Prekmurje in Eastern Slovenia bordering with Austria in the West and Hungary in the North and East as well as with the flat part of the Prekmurje. Historically, Slovenian region Prekmurje belonged to the Hungarian part of Austria-Hungary for centuries. During the Hungarian period the region was marginalised and deprived agrarian border region of Hungary with Slovenian national minority population which spoke specific Slovenian dialect frequently misinterpreted as archaic and even non-Slavic language. In spite of the fact that Hungarian schools in the region were without any teaching in Slovenian and the fact that the region was preserved. Notwithstanding the increasing Hungarian assimilation pressure during the late nineteenth and early twentieth centuries, Prekmurje was included in the Kingdom of Serbs, Croats and Slovenes after the World War I, in 1919.

More than seventy years had passed since 1919 to the establishment of the new independent Slovenian state in 1991. The first and the second Yugoslavia as well as the temporary return of Hungarian rule during the World War II had marked the political, social, economic and cultural development in Prekmurje and Goričko. For more than forty years after the World War II the region was caught isolated again between East and West Europe along with the Iron Curtain which divided European continent during most of the second half of the twentieth century.

In the 1990s Slovenia decided to join the process of European integration. Profound political decision resulted in the membership in the European Union (EU) at the beginning of May 2004. Slovenia joined EU together with Hungary and eight other European countries. Less than three years later at the beginning of 2007 both countries became a part of Schengen area. Prekmurje and Goričko finally escaped the political, economic and social isolation caused by historical political developments.

However, Prekmurje and Goričko have been less developed Slovenian regions since the end of the World War I and annexation to the Kingdom of Serbs, Croats and Slovenes in 1919. The modernisation processes were slow during the first Yugoslavia. Prekmurje had retained agrarian economic structure long into the second half of the twentieth century. The process of industrialisation, which started in the period between the World Wars I and II, has been slow ever since. The type of industrialisation has been classic with concentrations in textiles and urban centres. Agricultural development had inherited crumbled land ownership structure as a consequence of Hungarian inheritance law tradition. The socialist period, 1945-1991, worsened the private farm size situation with maximum land ownership limit. It was very low at 10 hectares of arable land. Additionally, private farmers owned less productive arable land because much of the best arable land was collectivised by the socialist authorities. Consequently, the productivity of agriculture in the region has been low, especially in the private sector. Therefore, rural population has increasingly been emigrating into the cities as well as into foreign countries. Service sector in the region was underdeveloped in the socialist period. Recently, the economic transition in Prekmurje has brought a more normal and balanced economic structure with faster development of service sector of the economy. Unfortunately, globalisation and the recent financial and economic crisis have brought new economic problems in the region with the decline of the most important textile industry. Prekmurje will very likely have problems in future with catching up with the Slovenian economic development level.

Agrarian, light and less developed manufacturing industries in Prekmurje and Goričko have preserved the natural environment to the degree which can be rarely seen in modern Europe. Consequently, the regulation of the government of Slovenia

established the Goričko Nature Park (GNP) on the ninth of October 2003. GNP covers 462 km<sup>2</sup> divided between 11 municipalities (Just, Kuzmič and Vratuša 2008: 5): Cankova, Dobrovnik, Gornji Petrovci, Grad, Hodoš, Kobilje, Kuzma, Moravske Toplice, Puconci, Rogašovci and Šalovci. Four of them (Cankova, Puconci, Moravske Toplice and Dobrovnik) occupy some territory outside of the park as well. Three main purposes of the GNP establishment are the protection of biodiversity and landscape diversity, the stimulation of development prospects for the population living in the GNP and acceleration of the economic and social developments inside GNP as well as cooperation with neighbouring regions in Austria and Hungary.

In this paper the author will analyse a more recent demographic development in the GNP which is determined by the modern demographic regime prevailing in advanced countries in Europe and other developed parts of the world. The paper benefits from, and is partially based on, author's previous research (Malačič 2011; Malačič 2012). The demographic situation in GNP is influenced by the general process of modernization as well as by region-specific historical, economic, social and cultural developments. The paper is structured as follows, the second part of the paper will analyse recent demographic development of Slovenia, Pomurje statistical region and Prekmurje. The third part will concentrate on population ageing and decline in GNP as two main characteristics of the demographic development in GNP. The next part will deal with the discussion of policies for recovery of the demographic as well as economic and social situation in GNP. Conclusions and references will end the paper.

# 2. The Recent Demographic Development of Slovenia, Pomurje Statistical Region and Prekmurje

Recent demographic development in Europe is determined by modern demographic regime (MDR) which was the result of completed demographic transition somewhere in the middle of the twentieth century. In Slovenia, the demographic transition had finished in the period between the population censuses conducted in the years 1953 and 1961 (Malačič 1984). The main features of the MDR are low levels of mortality and fertility of a population. However, the last fifty years have not witnessed population development equilibrium which would have guaranteed long-term sustainability of the main demographic processes and structures neither in Europe nor in Slovenia (Malačič 2008b). The most important newly developed demographic threats have been under replacement fertility levels and very fast population ageing. These two processes are bound together as a cause and a consequence. Low fertility is the main cause of the population ageing. In spite of advancements in mortality, longevity and population quality indicators in Europe

and Slovenia demographers still do not understand the MDR well enough neither do we have a well-developed theory which would have paralleled the demographic transition theory (Malačič 2006: 226).

Under-replacement fertility levels have been here with us in Slovenia since the beginning of the 1980s. In the years 1995-2005 Slovenian yearly total period fertility rates ( $T_f$ ) were at the level of the lowest-low fertility which is marked by the  $T_f$  1.3 or lower. The lowest  $T_f$  was in the year 2003, 1.2 (SY-06: 81). The model population with so low fertility level and average difference between the generations of parents and children of 29 years would have had an intrinsic rate of growth – 1.9 per year and would have halved in a bit less than 37 years (Malačič 2006: 247-248). In 2006, the  $T_f$  was 1.31 in Slovenia. It has increased recently to the level of 1.58 in the year 2012 (Slovenia in figures 2012: 17). The prolongation of under-replacement fertility level in Slovenia has caused very negative crowding of age structure effect of the female age structure on the future fertility levels.

Recent mortality and migration trends in Slovenia are much more positive. In 2012 life expectancies at birth were 77.0 and 82.9 years for males and females respectively (Slovenia in figures 2012: 17). Both of these figures have improved significantly in comparison with the year 1994. The male and female indicators increased in the 18 years period for 7.0 and 6.1 years respectively. The life expectancy at birth differs in Slovenia regionally as well. Recently it is about three years higher in Western than in Eastern Slovenia. The difference is caused by more advanced economic development as well as by more healthy Mediterranean diet in the West. Infant mortality rate declined in Slovenia in the period as well: 6.4 to 1.6 per thousand live births (SY-96: 87 and 93; Slovenia in figures 2012: 17).

Slovenia has been immigration country since the 1960s. Yearly net migrations were negative three times only in this a half century long period. The first negative net migrations appeared in the years 1991-1993 (RDDE 1995: 24). It was the consequence of the breaking away of the former Yugoslav federation. The second and the third negative value of the indication were recorded in the years 1998 and 2010 respectively (SY-98: 103 and SY-12: 91). However, the average yearly rate of net migrations in the period of economic crisis (2009-2012) was 1.7 per thousand of population (SY-12; Slovenia in figures 2012).

Regional demographic data for Pomurje statistical region and Prekmurje are less abundant. At the beginning of the year 2012 5.8 and 3.9% of the population of Slovenia lived in Pomurje region and Prekmurje respectively. In 2011 the age dependency ratio was 44.1, the mean age of men and women were 41.2 and 44.7 respectively, and the share of foreign population was 1.0% in the Pomurje region

(Slovene regions in figures 2013: 6). The Pomurje region is the least attractive region in Slovenia for foreigners. It has been an emigration region for long period (Malačič and Sambt 2003). The main reason is the low level of economic development in the region. In 2011, GDP per capita index in the region was the lowest in the country, 65.9 (Slovenia: 100.0) (Slovene regions in figures 2013: 5). Some additional demographic and economic indicators and figures for the Pomurje statistical region and Prekmurje will be showed in tables in the next section of the text.

## 3. Ageing and Declining Population in the Goričko Nature Park

Statistical data used in this analysis of the demographic development of the GNP comes mainly from the sources of the Statistical Office of the Republic of Slovenia (SORS). The regional nature of the data requests the decision about the most appropriate territorial unit of the analysis. Ideally, settlement based statistical data would be the only one which would match the territory of the GNP and the territory used for statistical data collection. However, SORS demographic and other statistical data based on the settlement level are very rare and for most of the indicators used in this analysis unavailable. Therefore, we have chosen municipality level data as the only practical solution. Fortunately, the municipalities which cover the GNP are small and display a relatively good match between the territory of the GNP and the territory of eleven municipalities that are completely or partially in the territory of the GNP. Seven out of eleven GNP municipalities have less than ten settlements. All settlements in eleven municipalities are villages, therefore, the area analysed is completely rural. Three municipalities are tiny even for the GNP and Prekmurje where municipalities are the smallest in Slovenia. Kobilje, Hodoš and Dobrovnik municipalities have one, two and three villages respectively.

At the beginning of the year 2012 the population of eleven municipalities included in the analysis of the demographic development of the GNP was 27,058. The figure is crude approximation because some bigger villages in Puconci, Moravske Toplice and Dobrovnik municipalities are outside of the GNP area. In 2012, GNP, Prekmurje and Pomurska region populations represented 1.3, 3.9 and 5.8% of the population of Slovenia respectively. The population decline has been the most prominent demographic characteristic of these Eastern Slovenian regions for decades. Prekmurje region, which is a territorially and statistically easily defined unit, lost 15.2% of the population in the period 1948-2012. The population declined from 94,914 to 80,517 or with index 84.8 (Malačič 2008a: 180 and SY-12: 524-526). The figures are estimations due to changes in the statistical definition of population used by the Slovenian statistical system.

Table 1 – The population (P) and selected relative demographic indicators of growth, gender and age structure in the year 2012 (1 January 2012) for the GNP municipalities, Pomurska region and Slovenia. Source: SI-STAT data base (10 October 2013) and SY-01: 569-571.

Territorial Unit	Population 1 Jan. 2012	P Index 2012/2001	% of Males	Age Structure – 2012 (in %)			Index of
			2012	0-14	65+	80+	Agemg
Cankova	1,890	89.8	48.8	12.3	15.7	4.2	128.0
Dobrovnik	1,338	95.1	47.2	13.5	17.6	5.2	130.6
G. Petrovci	2,146	91.1	47.8	10.9	20.4	6.8	188.0
Grad	2,226	91.6	49.4	11.4	19.5	5.3	171.9
Hodoš	379	103.0	47.8	9.5	23.5	7.4	247.2
Kobilje	621	98.9	49.9	12.9	17.6	4.5	136.3
Kuzma	1,604	96,0	48.1	14.0	17.5	5.9	124.4
M. Toplice	5,962	95.0	49.8	12.3	19.0	5.0	154.7
Puconci	6,136	96.1	48.5	13.4	17.8	5.2	132.6
Rogašovci	3,220	93.9	48.5	14.1	15.2	4.9	107.9
Šalovci	1,536	83.5	48.8	10.3	21.2	6.1	206.3
GNP	27,058	93.7	48.8	12.6	18.2	5.3	144.4
Pomurska							
region	118,988	95.7	48.8	13.1	17.7	4.7	135.9
Slovenia	2,055,496	103.0	49.5	14.3	16.8	4.3	117.3

More detailed selected demographic indicators for the GNP municipalities, Pomurska region and Slovenia are shown in Table 1. The region and the country are included in this and other tables of this analysis for the purpose of comparability. The second column of Table 1 shows the population of the territorial units at the beginning of the year 2012. All other relative indicators included in the Table use the overall population of a territorial unit as a base for calculation.

The population size differs substantially between municipalities in the GNP. The population of Puconci municipality is, due to the larger territory and close location to the Prekmurje centre Murska Sobota, 16.2 times bigger than the smallest and remote Hodoš municipality. In spite of the differences in the population size other selected demographic indicators in Table 1 are surprisingly similar for the GNP municipalities. The population declined in all municipalities but in Hodoš between the year 2001

and the year 2012. The biggest decline was in the Šalovci municipality where index of population decline was 83.5. The Šalovci municipality is neighbouring to Hodoš which is the only municipality with a population growth in the period analysed. The cause of population growth in Hodoš municipality is a prosaic one. In the Hodoš village an institution for long-term care started to operate in September 2011 and substantial number of older people immigrated into the village and changed the size as well as the age structure of the population.

More females than males lived in the year 2012 in all territorial units included in Table 1. The comparison of the gender structure of the population of Slovenia on one side and all other units in Table 1 on another side shows larger discrepancies in all territorial units but Kobilje and Moravske Toplice than in Slovenia. In countries and regions characterised by MDR live more female than male population. The main cause is the higher mortality of male population in practically all age groups. However, in small populations we deal with in the analysis gender migration differentials and incidental influences are also important. Therefore, surplus of women in the GNP municipalities is with two exceptions higher than in Slovenia.

The population age structure indicators included in Table 1 show advanced ageing processes which are the second important demographic characteristic of the GNP and Pomurje region. Generally, in all GNP municipalities and in Pomurje region in 2012 there were fewer children and more older people (exceptions were Cankova and Rogašovci) than in Slovenia. In municipalities on the eastern side of GNP indexes of ageing were very high. In Hodoš, Šalovci and Gornji Petrovci the figures of the index of ageing are 247.2, 206.3 and 188.0 respectively. The index of ageing is calculated as a ratio between the 65 years plus population and the age group younger than 15 years and multiplied by 100. The advanced process of population ageing in the GNP is caused mainly by low fertility and emigration of the younger population which seek work in other regions of Slovenia as well as abroad.

Fertility, mortality and migration are basic demographic processes which determine not only the population structure but a general and long-term population development as well. For small areas and small populations we usually have serious problems with the statistical data quality and with the validity of some basic demographic indicators. The law of large numbers, which is essential for the calculation of many demographic indicators, is absent in the case of small populations.

Notwithstanding all deficiencies of the indicators for small areas' populations the most common demographic rates for the GNP municipalities, Pomurska region and Slovenia are shown in Table 2. These rates show number of births, deaths, natural increase, net migrations with foreign countries and net migrations with other municipalities in

Slovenia per thousand population, growth rate per thousand inhabitants and the total fertility rate in Slovenia for the year 2012 with the exceptions for the Pomurska region and the total fertility rates for which the data are for the year 2011.

Selected yearly demographic indicators in Table 2 are only illustrative. All three demographic processes as well as the growth rate per particular year are covered. However, two important deficiencies of the indicators in Table 2 should be mentioned. The first is caused by small population numbers in the GNP municipalities as well as in Pomurska region. Therefore, the law of large numbers, which is very important for the calculation of the demographic rates, does not apply. Consequently, the influence of the incidental factors in a particular year and on particular demographic process can be substantial. The second one is connected to the age and some other demographic structures of the population in our territorial units and their influence on crude fertility, mortality and migration rates. In fact, the rates in Table 2 are not standardised and, therefore, they are not comparable well enough between the municipalities. The problem is even more serious. The majority of the statistical data which would be needed for detailed standardisation is simply not available in the datasets of SORS.

Territorial unit	n	m	j	nm <sub>f</sub>	nm <sub>m</sub>	r	T <sub>f</sub> *
Cankova	9.5	12.7	- 3.2	- 1.6	4.2	- 0.6	1.61
Dobrovnik	10.5	7.5	3.0	- 14.9	- 2.2	- 14.1	1.58
G. Petrovci	10.3	9.8	0.5	- 3.7	- 1.4	- 4.6	1.55
Grad	10.9	9.1	1.8	- 5.4	- 0.9	- 4.5	1.70
Hodoš	5.2	10.5	- 5.3	- 2.6	- 5.2	- 13.1	1.61
Kobilje	5.0	9.9	- 4.9	- 33.1	- 13.2	- 51.2	1.57
Kuzma	12.7	20.3	- 7.6	- 3.8	- 1.9	- 13.3	1.70
M. Toplice	8.9	11.4	- 2.5	- 2.2	- 4.0	- 8.7	1.58
Puconci	9.8	13.1	- 3.3	- 2.8	- 0.2	- 6.3	1.59
Rogašovci	9.1	13.8	- 4.7	- 5.0	- 3.4	- 13.1	1.62
Šalovci	4.6	8.5	- 3.9	- 3.9	- 2.0	- 9.8	1.64
Pomurska region*	8.8	11.8	-3.0	0.2	-	-2.8	1.60
Slovenia	10.7	9.4	1.3	0.3	-	1.6	1.56

Table 2 – Selected demographic rates for the GNP municipalities, Pomurska region and Slovenia in the year 2012\*. Source: SI-STAT data base (10 October 2013).

The symbols are n, m, j, nm, and nm, for number of births, deaths, natural increase,

net migrations to foreign countries and net migrations with other municipalities in Slovenia per 1000 population; r is rate of growth per 1000 population and  $T_f$  is total fertility rate or the mean number of children per woman during her reproductive age.

\*The data for Pomurska region and for the total fertility rate  $T_f$  are for year 2011.

Notwithstanding all data and other methodological problems with the indicators in Table 2 it is possible to observe crucial problems stemming from the three basic demographic processes. The main characteristics of the GNP municipalities are higher mortality than fertility and higher emigration than immigration. Consequently, negative natural increase and negative net migrations prevail practically in all municipalities and cause population decline. The differences between the GNP municipalities and Slovenia are striking. In spite of the demographic problems of Slovenia, especially low fertility and fast population ageing, the natural increase and overall population growth in the country are positive while in deprived, agrarian and border GNP region natural and overall population decline prevail.

In spite of the scarcity of mortality data by age for the Slovenian municipalities in the SI-STAT database the data are available for the calculation of age-specific mortality rates for two age groups: 0-64 and 65 and more years of age for the period 2008-2011. In principle, this allows us to conduct the standardization procedure (Malačič 2006: 50-52). By using four-year average mortality data for our small municipalities we diminish partly the influence of incidental or random factors on mortality. The population of Slovenia is used as a standard population. The standardisation procedure allows us to exclude the impact of the age structures in municipalities on death rates by using the age structure of a standard population for all municipalities.

The standardised mortality rates for the GNP municipalities for the period 2008-2011 are shown in Figure 1. A particular rate tells us the number of deaths in a particular municipality per 1000 inhabitants assuming the age-specific mortality of the population of a municipality and age structure of Slovenian population prevail.

The results of standardisation procedure confirm the fact that mortality in the GNP municipalities is considerably above the Slovenian average. The un-weighted average for the GNP municipalities in 2008-2011 (12.3 per 1000) is about one-third above the Slovenian average (9.0 per 1000). However, it is still necessary to bear in mind that our standardisation procedure is deficient due to only two broad age groups used in the calculation and due to the randomness caused by a small population size of the GNP municipalities.

The population age structure is an important determinant of fertility in a particular

territorial unit as well. However, SI-STAT database does not allow us to use a standardisation procedure for the calculation of standardised general fertility rate for GNP municipalities due to the lack of data. Instead we have calculated the average yearly general fertility rates for the period 2008-2011 for the GNP municipalities. The results – average yearly births per 1,000 women aged 15-49 are shown in Figure 2. The level of fertility in all the GNP municipalities in the period 2008-2011 was lower than in Slovenia. The un-weighted average for yearly average general fertility rate for the GNP municipalities in the period analysed was 34.4 births per 1000 women aged 15-49, which is approximately 25% below the Slovenian average (45.7 ‰).

Figure  $1^{1}$  – Standardised mortality rates (average for the period 2008-2011 and using population of Slovenia as a standard population) by the municipalities of the GNP. Source: SORS, SI-STAT database (10 October 2013).



Figure 2 – General fertility rate (average yearly births per 1,000 women aged 15-49 for the period 2008-2011) by the municipalities of the GNP. Source: SORS, SI-STAT database (10 October 2013).



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Population ageing and decline in the GNP municipalities are closely connected to some other demographic and economic indicators shown in Table 3 as well. We have selected the average number of people living in a household, activity, employment and unemployment rates and average monthly gross wage for the year 2011 and population density per km<sup>2</sup> at the beginning of the year 2012. Pomurska region and Slovenia are included in Table 3 for comparison. The illustrative indicators clearly indicate the economically-based demographic situation and development in the GNP municipalities. Generally, population density per km<sup>2</sup>, activity and employment rates as well as average wage per month are much lower while unemployment rate and to a certain degree the average number of people living in a household is much higher than the Slovenian average.

Table 3 – Selected demographic and economic indicators for the GNP municipalities, Pomurska region and Slovenia in the year 2011\*. Source: SI-STAT data base (10 October 2013) and SY-12: 513 and 544 – 546.

Territorial Unit	Density per km²*	Average Household Members	Activity Rate (%)	Employment Rate (%)	Unemployment Rate (%)	Average Wage per Month
Cankova	61.8	2.7	54.4	42.4	22.1	1356
Dobrovnik	43.0	2.5	54.7	43.3	20.9	1360
G. Petrovci	32.1	2.6	50.8	41.6	18.0	1108
Grad	59.5	2.8	51.1	42.1	17.7	1511
Hodoš	20.9	3.5	51.6	42.3	18.1	1218
Kobilje	31.5	2.7	58.0	48.0	17.4	1266
Kuzma	70.0	2.8	49.9	39.3	21.2	1214
M. Toplice	41.3	2.6	52.4	42.5	18.9	1206
Puconci	57.0	2.8	53.0	42.3	20.2	1451
Rogašovci	80.3	2.9	53.4	41.2	22.8	1286
Šalovci	26.4	2.6	54.4	36.1	20.5	1343
Pomurska region	89.0	2.6	53.7	43.7	18.5	1326
Slovenia	101.4	2.5	53.7	47.5	11.5	1525

\*The data for density per  $km^2$  are for 1 January 2012. The wage per month is in Euros.

## 4. Policies for Recovery

Low level of economic development in Pomurska statistical region as well as in Prekmurje and the GNP municipalities has been endemic in Eastern Slovenia not only for more decades but for more centuries. Poverty and underdevelopment caused temporary and permanent emigration of the population from Prekmurje and Goričko long before the end of demographic transition in the region at the end of the 1950s. Modern demographic regime has resulted in low levels of fertility and mortality since the beginning of the 1960s. The pool of young rural population has diminished considerably ever since but emigration and population decline have stayed with us in the region. Consequently, the question of appropriate economic, social, demographic and other policies for mitigating demographic processes in the GNP municipalities toward long-term sustainable levels arise. Additionally, for the topic of this article, as well as for the specific issue of the journal, the role of the GNP is also very important for the demographic and economic prospects of the people living in the GNP municipalities.

Generally, very broad and complex mixture of numerous policy measures would be needed for the demographic, economic and social recovery of Goričko and Prekmurje. Most of the policies should be designed at the government level and more or less for the whole Slovenia. However, specific regional goals and measures, especially those which would be designed according to the need of nature parks, are also needed.

Population policy should have been the most closely connected to the demographic development. However, the Slovenian population policy has been fragmented and partial for decades (Malačič 2005; Malačič 2010). Population policy measures in the country have had broader social and economic goals while explicit demographic goals have been completely missing. Policy makers from different sides of the political spectrum have been unaware of the importance of long-term sustainable development of population. The most serious consequences of such attitude have become visible in the least developed regions in Slovenia, Prekmurje and Goričko included.

It would be naïve and unreal to think that population policy alone can transform negative demographic trends into positive directions. However, specific and regionally targeted measures could have been useful and efficient especially in combination with other regional policy measures.

Economic development of the region and closing the gap in the average wage and per capita income between Goričko and other Slovenian regions are the most important long-term goals. The comparison with neighbouring regions in Austria and Hungary

is also increasingly important. Closed borders have gone. Unfortunately, the new border regime and possibilities offered by broader EU economic, social and other initiatives have not resulted in the regeneration and recovery needed in the region. Cross-border cooperation with Austrian and Hungarian neighbouring regions and nature parks is necessary but not sufficient. Long-term deprivation can be cured by substantial foreign direct investments. Greenfield investments would be especially welcome.

The positive influence of the better economic situation on demographic processes and structures is clearly visible in the GNP as well. In spite of the relatively small size of the GNP, the level of economic development in the western part of the GNP bordering with more developed Austria is considerably higher than in the eastern part bordering with less developed Hungary. Demographic indicators reflect these economic differences very markedly.

Recently the Slovenian government has tried to launch faster economic development in Pomurje with special help provided by the law targeting projects located in the region. The law coincided with the economic and financial crisis which have had devastated influences in the region. The crisis has not helped to trigger economic development in the region. There have been even corruption charges in the region connected to the projects financed by the help of this special law. This cannot be the recipe for success neither in Pomurska region nor in the GNP or its particular municipalities.

The establishment of the GNP should have economic and demographic goals and consequences as well. The first decade of the GNP's existence is a short period in the life of an institution. It has hardly changed basic economic and demographic processes in Goričko. However, it would be necessary to enrich activities of the GNP and in the GNP with measures for development goals. The GNP has helped tremendously in image building and for the broader geographic recognition in Slovenia and in Central Europe. However, the broader efforts for the use of the GNP trademark are needed. Ecological tourism is the most obvious example of the use of the GNP trademark. But it is insufficient. Much more is needed. Revitalisation and further farming development, handcraft, photo-hunting of wild life and some other industries would provide better life for younger generations. Specific education is needed most and the introduction of modern and high-tech activities and industries in the GNP and the region is also necessary not only to replace several closed and bankrupted textile plants in the GNP but to start and further develop modern post-industrial economic structure.

## 5. Conclusion

Prekmurje and Goričko have transformed tremendously since the Hungarian period in the region which had lasted until 1919 if we omit the World War II Hungarian short return. However, modernisation processes have been slow ever since and the region is still underdeveloped, agrarian and deprived in comparison with Slovenia and its other regions. The main demographic characteristics of the region are population decline, low fertility level and fast population ageing.

The GNP population has been analysed on the basis of the municipality level statistical data. Eleven municipalities included into the analysis completely or partially cover the territory of the GNP. In 2012 the estimated GNP population represented 1.3% of the population of Slovenia. The population size differs substantially between eleven municipalities. However, the main demographic processes and structures in these municipalities are surprisingly similar. The rural and economically deprived nature of the GNP territory have been the main determinants of negative natural increase and negative net migrations and consequently the population decline combined with fast population ageing.

Complex and numerous policy measures would be needed for the demographic, economic and social recovery of Goričko region. Specifically targeted population policy measures would not be enough for long-term sustainability of the demographic development in the GNP. Faster than Slovenian average economic development is needed most. Slovenian and foreign direct investments are necessary for the introduction of modern and high-tech economic development and transformation. Further development of the GNP institution should be complementary in this respect.

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# THE ROLE OF HEMP AND FLAX IN ORGANIC PRODUCTION AND PROCESSING IN GORIČKO Dejan Rengeo

Abstract: In many industrial processes (textile, food, cosmetics, pharmacy, energy, etc.), renewable input material increases the demand for certain fibre, pulp, drug and seed crops, especially those which meet strict environmental demands. Among traditional field crops, hemp and flax are very versatile drug, fibre and seed plants due to their vigorous growth and adaptation potential: high fibre and pulp plants are sown in extreme densities in the north, while drug and seed plants grow in thin stands towards the warmer south. If available, water is not the limiting factor, as both seed and dry matter (DM) yields may surpass all other fibre crops in the temperate region. Since hemp is used for drug production, its cultivation is prohibited or controlled in many countries, also for the production of fibre, pulp and seed. Therefore, the demand for and prices of this raw material are still growing, especially if produced without chemicals (organic, biodynamic, sustainable, etc.). Seeds and fibre have also been the parameters in our field studies where the effects of the increasing availability of nitrogen (N) and water on root development have been examined. The importance of roots in soil drain ability has been neglected, even though the roots play an important role in draining and the removal of heavy metals from polluted soil, since heavy metals accumulate in leafs and seeds, but less in stems and fibres. Tests in Poland, Ukraine and Japan have shown that stems can be used as a draining material in drainage systems, which is a new idea. Long years of hemp and flax cultivation in the Goričko Region speak in favour of these crops, since wild animals do not attack them and they are not sensitive to draughts. Moreover, these two crops are suitable for cultivation on less fertile land and ideal for the development of social entrepreneurship and re-awakening of traditional home crafts, such as the production of homemade canvas, apparel and ropes, which contributes to the integrated development of culture and tourism.

**Keywords:** hemp, flax, homemade canvas, medical plants, hemp extract, organic farm, sustainable development

## 1. Why Cultivate Hemp and Flax?

According to the Club of Rome, the world is on the verge of an ecological and social catastrophe. The greenhouse effect, thinning of the ozone layer, withering of plankton and changing of oceanic currents are but a few causes of the rapidly increasing climate changes. This tells us that something is terribly wrong with the human society. The only solution seems to be a complete reorganisation of

the economy and political system. In the opinion of the World Bank, economists should take into consideration the cost of environmental pollution and tax policies must appropriately promote and encourage nature-friendly industrial branches, and discourage those based on dirty technologies.

Never throughout history have people been as hostile to nature as today, also by neglecting the plants that used to be cultivated and exploited as a raw material for clothing, paper, oil, food and medicines. In the past, the most used fibre plants were flax and hemp. Now, in the nylon age, they are almost forgotten. However, due to new plant producing and processing technologies, it is possible to use flax and hemp completely. Under such condition both plants can be as competitive as new artificial materials derived from non-renewable resources. Because of the surplus of traditional agricultural produces in the western world, industrial plants are even more attractive for farmers.

Hemp is a versatile plant with many possible uses and the demand for it is increasing. It is cultivated for the production of fibres, cellulose and seeds. In the Netherlands, the hemp yield amounts to 10 - 17 t/ha of dry matter. If sown less densely, the plant gets more sunlight and assimilates more energy in its seeds. The result is an increased seed yield and therefore a higher economic benefit. However, there remains the problem of hemp mechanical gathering by combine harvesters because of its robustness and height which reaches over three meters in European continental climate and up to five meters in the southern vegetation zones (Figure 1). Nevertheless, manual harvesting also has its benefits. Hemp seeds contain a lot of proteins, which may contribute to the reduction of famine in the Third World, while stalks can be used as a building material, cellulose or fuel.

The seed yield varies depending on the cultivar, fertilizing, soil type and water availability. Within the Slovenian climate conditions, the first attempts of hemp cultivation yielded 1 t/ha of seed and 5 t/ha of stalk mass.

Hemp and flax are physically very similar, but botanically completely different. Contrary to hemp, flax grows successfully in poor soils and it is not threatened by wildlife. Summer draughts are not harmful, in fact, even beneficial for faster ripening and better quality. The fibre yield of flax is two to three times lower than hemp fibre yield, but the seed yield of flax is two to three times higher than hemp seed yield. The content of fatty acids is higher in linseed than in hemp. Moreover, flax needs bi-annual rotation, whereas hemp can be grown continuously for a few seasons, without the need for rotation.

## 2. Roots and Rotation

The hemp root system develops slower than the above-ground part of the plant, so its mass contributes only 15 - 20% to the total mass of the ripe plant. It grows most successfully in fertile soil containing a lot of humus. In a permeable soil, the main root grows deep into the ground to use the nutrients in the groundwater. In less permeable soils with a higher underground water level, the plant develops a shallow and wide-spread root system. Lack of nutrients and low underground water levels force hemp to develop roots deeper in the soil. After harvesting, the roots that remain in the soil slowly decay and work as canals, enabling the penetration of water and air deep into the soil, which brings about better cultivation results in the next season.



Figure 1 – Over four metres tall hemp growing on a sand soil near the Drava River

From the point of view of rotation, hemp and flax are an excellent match and can follow one another. Intermediate crops are winter cereals, such as rye, spelt, wheat and oats, followed by traditional crops like buckwheat, poppies, millet and different legumes. Ideal rotations can be arranged in a way that increases the fertility of fields and supports the biodynamic farming. All this guarantees a large and quality crop, allowing the development of agriculture and other complementary activities, not solely survival.

# 3. Collector of Nitrates and Heavy Metals

The usual nutrition requirements for hemp to produce 10t of dry matter are 60-100kg of N, 120-150kg of  $P_2O_5$  and 120-180kg of  $K_2O$ . Hemp is also capable to

absorb a large quantity of nitrogen, as in permeable soils, its roots developing very deep to reach it. This is certainly a good characteristic, considering the increasing nitrate pollution. In Poland, hemp has been cultivated on fields polluted with heavy metals. Pollution affects neither the yield nor the fibre quality, since heavy metals are absorbed by leaves, roots and seed. The stalks and fibres can absorb only a negligible amount of heavy metals. The question remains how to use contaminated seed, leaves and roots. The question is how to use such "alloyed" seed, leaves and roots.

## 4. The Nutritional and Medicinal Value of Hemp and Flax

The production of hemp and flax has been revived primarily due to seed production. Because of the increasing dependence on food from supermarket chains and industrially processed foods, the balance of saturated and unsaturated fatty acids has been disturbed, which has profound effects on human health, as well as animal husbandry. The seeds of flax and hemp are a rich source of unsaturated fatty acids. especially the omega-3 and omega-6 fatty acids. Therefore, their seed oil is becoming more and more valuable and sought after. Linseed is increasingly demanded in animal nutrition. In order to cover the needs of the missing omega-3 fatty acids, 7% of arable land should be planted with flax or hemp. The by-product are straw fibres whose potential as a versatile material has been underused. The green parts of hemp contain a full range of cannabinoids, of which up to 80 different types have been discovered and researched and most of them have a valuable pharmacological value in the treatment of many diseases of modern man, for which there are no equivalent chemical substitutes within the current pharmaceutical industry. The diversity and usefulness of cannabinoids are best shown in Figure 2 taken from the Trends in Pharmacological Sciences journal. Hemp is a treasure of many medicinal substances for the prevention and treatment of modern diseases which represents an additional potential for its exploitation without restrictions.



Figure 2 – Pharmacological actions of non-psychotropic cannabinoids (with the indication of the proposed mechanisms of action)
Abbreviations: D9-THC, D9-tetrahydrocannabinol; D8-THC, D8-tetrahydrocannabinol; CBN, cannabinol; CBD, cannabidiol; D9-THCV, D9-tetrahydrocannabivarin; CBC, cannabichromene; CBG, cannabigerol; D9-THCA, D9-tetrahydrocannabinolic acid; CBDA, cannabidiolic acid; TRPV1, transient receptor potential vanilloid type 1; PPARg, peroxisome proliferator-activated receptor g; ROS, reactive oxygen species; 5-HT1A, 5-hydroxytryptamine receptor subtype 1A; FAAH, fatty acid amide hydrolase.

# 5. Irrigation of Hemp

To produce one kilogram of dry matter hemp needs 600kg of water. Its transpiration coefficient is between 200 and 600mm in a season. The water capacity optimum is 65 - 70% of full saturation. The water needs of hemp change during growing and follow in the next order: 30% from sprouting to the beginning of flowering, 50% from the beginning to full flowering, 20% to fully mature. Because of its height, the irrigation of hemp by sprinkling is not simple and large interception waste is to be expected. A better solution seems to be surface dripping irrigation or, even better, irrigation with underground pipes. The last solution ensures the most rational water exploitation because of the spread root system and minimum losses due to evaporation.

# 6. Other Positive Characteristics of Hemp Cultivation

Because of its height, which can be 3 - 5 metres, and the adhesiveness of its leaves that attach pollen and other flying particles, hemp is irreplaceable as a protection against field pests and wild animals. Austrian producers have noticed a decrease in diseases and a higher honey yield from bees grazing on hemp. Male plants have a very long flowering period (30 - 45 days) and produce a lot of pollen that is taken by bees. Russian scientists have also noticed a positive influence of hemp on decreasing the bee diseases. In the past, hemp plantations were an important source of food and shelter for birds. Therefore, the population of rare birds may increase with hemp plantation. The fields where hemp is grown remain free of weeds. Nitrogen fertilisers can be omitted there where the rotation of crops, i.e. the combination of hemp and leguminous plants, takes place.

# 7. Hemp as a Building Material for Irrigation and Draining Systems

Crushed hemp stalks treated with silica and mixed with lime or cement are a universally usable building material which can be compared to concrete. The main characteristic of such a material is that hemp is subjected to mineralisation and petrifaction. With aging the material becomes very hard, even harder than concrete and four times lighter. The mentioned process of mineralisation was already known by Egyptians four thousand years ago. The procedure is now patented by the French company Chanevote Habitat. They sell hemp treated with silica under the commercial name of "Isochanvre". In the last few years, France has produced 6,000 tonnes of hemp for building purposes each year. It would be very interesting to test the adequacy of this material for irrigation and drainage systems. It would be reasonable to produce hemp near the building sites, as in this case there would be no need for steel reinforcements. The material is also much lighter and so it enables easy manipulation and transportation and, finally, it is natural and binds  $CO_2$  for a long time. It can be decomposed by natural processes with no harm for the environment.

Before the invention of nylon, firemen used pipes made of hemp fibres. Such pipes can also be used in irrigation systems, especially for the irrigation of hemp plantations.



Figure 3 – The most rational exploitation of water can be achieved with irrigation using underground pipes or with individual irrigation of each plant.

# 8. Conclusion

All the above-mentioned characteristics testify that hemp plays a very important role in integrated and organic agriculture. Developing the industry based on industrial plants demands more planted land which will positively affect agriculture and the environment. The surpluses in traditional agricultural produce will decrease, farmers will sell their products to permanent customers and variegated rotation will enable a reduced use of pesticides and chemical fertilisers. The quality of products will become as important as the quantity. High nutrition value and the versatile use of hemp seed may completely change the nutrition habits and reduce the consumption of meat.

Irrigation can increase the hemp seed yield and improve the economic effects. These possibilities should be reconsidered worldwide. In future, crushed hemp stalks treated with silica and mixed with lime or cement may replace concrete within irrigation and draining systems. The use of pipes made of hemp fibres may also bring advantages and contribute to reducing the influence of plastics and metals.

The first hemp plantations in Slovenia were established at Goričko. Half of the Slovenian hemp producers harvest their crop manually. They collect it with care and gain maximum yield. Today's producers do not plant the crop just for profit, but to return back to nature, to defy the social system, for pure child curiosity and gatherings at harvest time.

Restoration of hemp and flax stalk processing into canvas and thereafter into clothing is a very prestigious handicraft and a valuable cultural heritage which everybody is dreaming and talking about. Yet, it has still not been fully established. Hand-crafted clothing from the Goričko yarn factories raises the consciousness of man and brings him to his senses. Today, people are dressed and are rarely naked. In addition to food, water and sex, this is the most important issue. People who are able to make clothes are also able to grow food and build their homes. They know how to cultivate the land and collect the produce. Homemade production of clothing is supported by all shapes of social entrepreneurship, cooperative collaboration and socio-cultural activities.

The Goričko Nature Park pays a lot of attention to this industry, directing its development in the right course. A man who masters the process from plant to trousers with his own hands is capable of technological development and progress. To hemp and flax, Goričko is of equal value as the Silicon Valley is to computers.



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II. NATURE PARKS – CASE STUDIES

# NATURE CONSERVATION AND PROTECTED AREAS IN SLOVENIA - PRESENT AND FUTURE SIGNIFICANCE Mladen Berginc

Abstract: Despite the early awareness of the importance of nature conservation on the territory of the present-day Slovenia and the requirements for the protection of nature conveyed already over a century ago, the issue has never been addressed adequately with regard to the state of nature. Namely, the country is endowed with a rich nature but the awareness of the need for its protection is low. The same applies to the establishment of protected areas. Knowledgeable naturalists, who long ago submitted a Memorandum on nature conservation to the authorities, pointed out that the country was responsible for the conservation of biodiversity. However, the instruments for nature conservation, among which is the establishment of protected areas, have been seldom used. Currently, the protected areas cover 13% of the national territory, which ranks Slovenia among the countries with the lowest share of protected areas, although its biodiversity index is one of the highest in the EU countries. Notwithstanding the opportunities that protected areas present in terms of developmental and other beneficial effects, the Government funding has always been meagre in this area. Instead of the manager's struggling and fighting for the survival of protected areas, the invested assets could effectively increase their public benefits. Since the country does not have a well-established sustainable development system, through which it could, among other things, better assess the needs and benefits of nature conservation and, on this basis, support the operation of park institutions in a subtle and appropriate way, the performance of the State remains largely unsatisfactory in this area. Slovenia has bound itself to the protection of the environment and nature by a number of documents, but they have mostly remained a dead letter. In times of crisis, the environment and nature protection should be used as a starting point for the transformation of social values. Under such conditions, protected areas may also gain their proper place. In any case, Slovenia needs protected areas for its future.

**Keywords**: nature conservation as public interest, protected areas, operators of protected areas, sustainable development, operational programmes of protected areas, establishment and management of protected areas, European Union legislation, the State

## First Awareness of the Importance of Nature Conservation

On the current territory of Slovenia, recognition of the need to protect nature emerged at the beginning of the XXth century, similarly as in the then culturally-conscious countries in Europe and North America. The initiative for the protection of the Seven Triglav Lakes that Anton Belar addressed to the Austro-Hungarian authorities in 1908 marks the beginning of environmentalism in Slovenia. Already in those times, various interferences with and pressures on the environment caused concern among naturalists and nature lovers who drew attention to the need to protect plants and birds and thus they increased the awareness of the importance of preserved nature. Due to this historical fact and subsequent measures by the then authorities to protect some plants (e.g. Blagay's Daphne and edelweiss), Slovenians were among the first environmentally aware nations.

When the conditions stabilised after the atrocious First World War, nature conservation and the creation of protected areas were gaining an increasing support from naturalists and other knowledgeable people or intellectuals of that time. Therefore, it was no coincidence that, at the beginning of 1920, the Department of Nature and Natural Monuments Conservation at the Slovenian Museum Association submitted a Memorandum to the Provincial Government of Slovenia, calling for an urgent action to protect and conserve the most important natural areas, individual plant and animal species and underground caves. It was essentially a programme proposal or strategy, whose requirements and policies are appropriate even today.

The Memorandum clearly expressed a demand for the creation of parks along the lines of "similar parks in other countries". Already then it was clear to the intellectuals that "...in our country, which is in the forefront of the European countries in terms of faunistic, floristic and geological values, there is an urgent need to begin serious work along the same lines ... if we wish to defend ourselves against the otherwise just reproach of being uncultured and oblivious of the importance of nature conservation". It was actually an appeal and programme to stop, through the conservation of the most important parts of nature, the uncontrolled exploitation and the consequent destruction, and thus place the country among the civilisationconscious nations of Europe. Its basic mission has still the same meaning and weight, irrespective of the nearly a century-long time difference that separates us.

Parks, as instruments of nature conservation, were not accidentally an important issue in the Memorandum. Demands for the protection of large nature areas in the Kamnik-Savinja Alps, the Julian Alps and in the regions of Kočevsko, Notranjska and Ljubljana Marshland pursued the goal of preserving rich and diverse natural landscapes in the country, following the examples and experiences of parks established in other countries. That was the only possible approach to the conservation of large, specific ecosystems in geographically integrated areas. The authors of the Memorandum were aware of that and exposed the parks as a primary objective.

The Memorandum was addressed to the Government that had the sole power and administrative mandate to establish and protect a park area. Interference with ownership rights and their limitations resulting from the protection of such areas were possible only through the actions taken by the state authorities. Therefore, the Memorandum proposed to the Government to designate the state-owned land for protected areas or regulate the issue with private owners. An interesting thing was the requirement to waive the ownership of Born's estate in the Kamnik-Savinja Alps for the purpose of establishing a protected area. Interference with property relations was (and still is) the largest problem in achieving the nature conservation objectives. At that time, the State had a lesser role with respect to the absolute nature of property rights than later with the development of modern democratic societies that followed a broader understanding of the need to ensure public benefits at the expense of reducing the absolute postulates of private property.

Aware of this problem, the authors addressed the Memorandum to the Government and thus launched a civil society initiative as a visionary desire to preserve the values relevant to the whole nation and the entire society. This indirectly emphasised the importance of public interest to protect and conserve nature, which was a historical shift in the field of nature conservation. All subsequent events that followed the Memorandum in the area of nature conservation through various political formations stemmed from an awareness of the need for the state administrative regulation of nature conservation and the importance of the system supported by national legislation and government measures.

# The Independent State and Integrated Nature Conservation System

In Slovenia, the development of nature conservation has had many ups and downs in its long history. With the independence of the country and the consequent need for comprehensive legislation and regulation in all areas of the functioning of a modern State, such as Slovenians desired to have, a similar requirement also arose in the field of nature conservation. The Slovenian legislation and sectoral policies had to rely on the European Union and be harmonised with its legislation. The standards of the European legislation that followed the previous, already established continental and international conventions, and the public belief in the necessity of the protection of nature, which was thoroughly undermined and distorted in many a place in Europe, are very demanding and highly placed. (Incidentally, all this points to the fact that awareness of the importance of nature conservation and protection is in inverse proportion to its degradation.)

Therefore, a great opportunity was created for nature conservation, since under different conditions and without the mandatory EU standards, which could not have

been avoided, the appearance of nature would certainly be different today! Integrated and legally regulated nature conservation was a particular fulfilment of the idea and desire of many precedent generations of naturalists who strived for the inclusion of this area into an effective regulatory system at the national level.

Broad public awareness of the need for nature conservation and the resulting political will to comprehensively regulate this public domain to the benefit of the society and future generations has never truly come to life. A persistent lack of public consensus on high environmental protection standards, as a civilisational norm, prompted a more or less partial settlement of specific nature conservation issues, often depending on the current political climate (i.e. politicians reluctant to support nature conservation). Nevertheless, the European Union accession process triggered the development of the national legislation on the principles and requirements of the EU nature conservation regulation.

To that end, it was first necessary to ensure an appropriate legal nature conservation system within the national legislation, followed by an adequate organisational upgrading. The laws and bylaws constituting the system (currently there are about sixty) are based on the principle of integrated nature conservation as a component of the public interest. Today, the Slovenian legal system incorporates nature conservation in all legal forms, from the constitutional to international law, also including the national contents which are not linked to the European standards. Thus, the system comprises extensive regulation aimed at the establishment and management of protected areas. As a standard component and one of the main nature conservation instruments, protected areas are set within the framework of direct conservation measures decided upon by government bodies or local communities.

In comparison with other countries, Slovenia has in general always had a wellpreserved nature. A belief that Slovenia has a more varied and rich nature than the average in the European Union has contributed to the implementation of European standards through the adoption of new legislation which resulted in a spatially extensive protection, in particular with the Natura 2000 European ecological network. There are certainly many who dwell upon the scope and high level of nature conservation standards, who are not able to understand the nature conservation objectives and deem the nature protection areas too extensive. Such opinions have led to the conclusion that the country has given up its further development, as nature conservation is not compatible with the society's developmental needs. Such shortsighted views do not consider where development has led us on a global scale. They keep forgetting about the rapid loss of biodiversity and climate change, both threatening our economic future and existence.

#### **The Evolution of Parks**

The initial period of the functioning of Slovenia as an independent State was imbued with the search for new paths in all areas and, certainly, also in the field of nature conservation. During that period, at least in the beginning, there was a lot of understanding and enthusiasm for the establishment of new protected areas at the national level. For instance, the Škocjan Caves Regional Park and the Škocjan Inlet Nature Reserve were established almost simultaneously in the second half of the nineties, before the nature conservation legislation was adopted.

Moreover, a quite serious idea emerged to proclaim, all at the same time and by a single law, large and most significant parts of the country as park areas, which represented a significant progress, since the State had not established any new protected areas for fifteen years. Namely, the last two proclamations of protected areas date back to 1981 when the Triglav National Park and the Trebče Memorial Park were established. In the late eighties, there was a period of a few years when the then municipalities, which were much larger than the present ones, were establishing small parks routinely, but a vast majority of such proclamations remained only on paper and, ever since their legal existence, the parks have never prospered. Today they represent a particular nature conservation problem due to the lack of substantial legal amendments, as well as the subsequent fragmentation of municipalities that further complicated the relations between the founders and the operators of protected areas.

Throughout the long history of the more or less successful establishment of protected areas, even during the periods of favourable conditions, there has always been a strong opposition to any intentions to establish large areas under the highest level of protection, i.e. national parks. According to the existing and enacted categorisation of parks, in line with the standards of the International Union for Conservation of Nature (IUCN), a national park is a category which could be easily assigned to many areas in Slovenia. However, there was not enough determination to take such a step. The reasons lie mainly in the initial soft approach of introducing lower categories, which would be more acceptable to the Government, local communities and the wider public. Hence, the first landscape and regional parks with lower nature protection standards were successful. It had been expected that when the park infrastructure worked well and gained wide support and understanding, the phase of formation and establishment of at least one or two national parks would have followed. Alas, programme restrictions in the field of nature conservation led to the situation where it was more necessary to direct the efforts towards the survival of existing protected areas than to embark on large-scale projects. The situation was even more complicated due to a long and at times painful drafting of a new law on

the Triglav National Park, that for the sake of political intrigues and hitches reflected badly on the public's opinion the way in which the Government was managing the largest protected area in the country. All this was bad publicity for the subsequent establishment of new protected areas.

However, it should be underlined that, despite opposition, earlier environmental policies have been harmonised with the European *acquis* and, gradually, systemic foundations and legal conditions opened the path for sustainable development as the only possible, proper and long-term solution for the future.

## **Sustainable Development Policy**

In Slovenia, the policy of sustainable development has not found expression in its integral and noblest sense, let alone a sounder understanding of why it is needed at all. Actually, there is no such policy anyway for many reasons. The State has so far not dealt seriously or in a complex way with the sustainable development issues. There are no clear strategic directions in spite of political invocations and a declared belonging to the civilisation principle of sustainable development. A more or less random set of environmental policies, including nature conservation, has resulted in a "no-programme" policy of the country's sustainable development.

Although the country managed to prepare a comprehensive legislative package, as a prerequisite for the EU accession, it lagged behind at a later stage in its operational implementation, not fulfilling the goals and expectations, also in the areas of environmental protection and nature conservation where there was not enough power for a critical breakthrough in the national policy and at the programme level.

The Government Council for Sustainable Development, established by the Prime Minister Dr. Janez Drnovšek in 2002, has never truly come to life and after a few attempts of its restoration, it has remained a "toothless tiger" also under the subsequent Governments and never played the role assigned to it. The State has consistently avoided the binding programme decisions in the area until everything has sunk into oblivion and even considering the sustainable development policies has become pointless. The abandonment of the never seriously tackled activities is undoubtedly due to the lack of development visions and overall development strategy of the country. In the current development strategy, which is expiring, sustainable development is referred to as the fifth priority.

Programme policies of individual ministries have usually received the necessary governmental or parliamentary approvals; however, their integration as a common denominator of the society's future and their clear, sustainable long-term objectives

and development priorities have so far not been achieved. Under such conditions, the country would urgently need a document on sustainable development, not in the sense of the former central economic and social planning, but as an extract of the fundamental sectoral policies, based on the principles of environmental sustainability. Nature, as the foundation of our environment, represents with its components and functions our life basis, which is slowly but steadily thwarting.

The role of the state is not only to provide public services in the areas of health care, education, culture, justice, security and defence, but also a concern for the conservation of nature and natural resources, environment, landscape, culture, etc. Since the environmental starting points, including the nature conservation content, are the key input for sustainable development policy, the current situation is even more worrying because the State has not adopted any new programme documents (the National Environmental Action Programme and the Biodiversity Conservation Strategy expired in 2012).

In times of difficult economic, financial and social situation, which Slovenia has been facing in recent years as a consequence of the exceptionally deep crisis resulting from various mistakes made by business and political elites, the way out of troubles should be sought through the integration of environmental policies and adherence to the principles of sustainability, although it may sound utopian, as the costs and resources for the implementation of an active environmental policy are very scarce in times of crisis.

Ecological policies that ensure the conservation of nature and natural resources, such as water, air, soil, forests, biodiversity and others, are even more important when looking for a breakthrough from the darkness of the tunnel of crisis as opposed to an affluent society. Using the established patterns of investments (e.g. in tourism and agriculture), without considering the future long-term climate changes in Slovenia that could make such investments useless in a very short time, would be harmful, a waste of money and a great foolishness from the economic point of view. Not much effort is needed to understand why in Switzerland the lowest limit of 1,500 m altitude was set long ago for investments in skiing infrastructure, while in Slovenia such investments continue at three times lower locations. It is clear that the State, as a large investor, should provide for the common good of all citizens through its regulatory role. Nature conservation and environmental protection are certainly the primary public benefit areas, which the State has to take care of through its programming policy. Unfortunately, abandonment or even rejection of the importance of public interest, which is currently the prevailing mantra, along with the negation of the regulatory role of the State and giving preference to private interests, seriously affect the general situation in the country.

## The Functioning of Public Services and the Position of Protected Areas

The exclusion of the role and importance of public services in the field of nature conservation had started with strict reduction measures a number of years before the official anti-crisis measures that constrict and limit the functioning of all state institutions, and even more so the protected areas management services because of their previous restriction. Human resource constraints and financial cuts in this area were the practices of all past governments. Among other things, this was also a result of poor, mostly only superficial environmental and nature conservation policies. After 2004, nature conservation was Cinderella to all previous coalition governments.

With the exception of restrictive funding of the existing public institutions, acting as managers of protected areas, everything else, including the establishment of new protected areas, was extremely difficult, if not prevented. A few projects of the establishment of large protected areas, which had already been the subject of the Memorandum in 1920, were stopped or could not be realised due to the lack of political will, even though important steps had been made towards their proclamation. This happened in the cases of the establishment of the Kočevsko Regional Park, Kamnik-Savinja Alps Regional Park and Snežnik Regional Park. Some years ago, these cases were dealt with by the Court of Auditors.

In the first decade of the new century, there were signs of a new politics that developed into a growing phenomenon of neo-liberalism during the already deepening crisis. The withdrawal of the State from the spreading of the network of protected areas, as an activity in the broad public interest, was but one sign of it. Despite great efforts, the parks established during that period (Goričko Nature Park, Strunjan Nature Park, Ljubljana Marshland Nature Park and Sečovlje Saltpans Nature Park) were left without adequate funding, with meagre annual budgets, while the last crated Radensko Polje Nature Park has not yet come to life due to the lack of financing, although it was formally established at the end of 2008.

The problems and consequences of such (non-)financing, resulting in depleted programmes that could not ensure even a minimum implementation level of the basic mandatory tasks and objectives, are known only to responsible persons of the managing institutions. In 2010, all public institutes established by the State to operate the protected areas received EUR 3,552,143 from the national budget, which represented 0.03% of the total annual budget or 1.15% of the environmental ministry's budget, and the amount has been decreasing ever since.

The operators manage as well as they can. For the implementation of the so-called active conservation policy programmes, which is their core public mission, they

take bank loans; recently, slightly more favourable loans can be obtained from the State Treasury Account, which is under the jurisdiction of the Ministry of Finance. The funds are also used to participate in EU public tenders. This enables them to obtain additional resources to finance their programmes, for which the funds are not provided by the State, their founder. Programme operation of park institutes is of vital importance and required by law. Without programmes, the operation of such institutions narrows down to just a plain administrative lingering.

The absence of nature conservation, which is primarily oriented towards the local population, connecting with them, supporting their living and working within the protected area and its surroundings, and towards cooperation with local communities, is a sentence to death on the instalment plan for any park. The local population who have to be convinced with sound arguments about the benefits of a planned protected area, including the promises of support and assistance to such an area (mostly rural, with much worse economic conditions than in urban areas), is disappointed after the establishment of a protected area if the promised activities do not take place, which further reinforces their scepticism towards the State that has "blessed" them with the protected area. Namely, it turns out that the State cannot finance joint projects, which would mean a lot to the residents in terms of development and other benefits. Moreover, it is ironic that in fact only modest financial resources are needed for protected area programmes. In any national protected area, a few hundred thousand Euros would be enough to create quality programmes for supporting and meeting the needs.

As mentioned above, the operators managed to obtain some resources from the EU funds for good and competitive projects, alone or in cooperation with crossborder partners. In the period from 2000 to 2010, about ten million Euros were acquired for protected areas in this way, which helped the protected areas to survive in unfavourable financial circumstances, caused by insufficient and shrinking State funding, thereby enabling some important development activities at the local level. The amount is large and it represents important additional resources for the management of protected areas.

Exceptional efforts to obtain funds through project operation or expansion of other own economic activities were a logical consequence of the reductive state policy. While the park operators were forced to direct all endeavours to keep up the operation of parks, a political tendency and later a requirement appeared in the government circles to urgently merge public institutions into a single, central national institute to manage the entire national network of protected areas. It has never been clear what the reason behind that was, but it probably derived from a lightheaded understanding that radical cost-saving measures were needed in a crisis situation. Of course, nobody knew how much could be saved in this way. The proposal overlooked a number of elements, essential to the existence and operation of protected areas, including the fact that in addition to public institutes there were also two private management bodies, acting as public authorities, which operated the protected areas on the basis of granted concessions and, therefore, could not be merged into a public institution. Moreover, the integration of protected areas into the local environment and life was completely ignored. Centralised management, established through a single national institution, would take place outside protected areas, thus depriving the local population of participating in the operational management of protected areas. This would also impede the mission of protected areas, exclude them from the local environment, alienate them from the people who live there and certainly make the future impossible both for the existing and potential new protected areas. After all, the existing solutions are comparable with the park systems in other countries.

The operators of protected areas exposed themselves intensively to preserve the existing state which is the result of a long-standing and proven organisational system that ensures the basic operation of protected areas. Their efforts led to the creation of a document entitled "Analysis of the Situation in the Functioning of Public Institutions in the Field of Nature Protection Areas with a Proposal of Measures to Streamline Their Operation". The document was prepared within the Ministry of the Environment and submitted to the Government.

The Government considered the Analysis in 2010. The document deals in detail with the organisational, personnel and financial situation and other conditions for the functioning of public services in the field of protected areas management. The extensive material, highlighting in depth the good and bad sides of park management, draws attention to the multifaceted importance of a well-functioning network of protected areas and to its positive effects on the local and national economy. The conclusions, *inter alia*, point to a drastic reduction in budgetary resources for the operators of protected areas, in particular for the institutes established in recent years that have not been adequately financially supported and have been understaffed since their establishment. A final finding of the document is the fact that the national programme objective of extending the network of protected areas is lagging behind. The objective was laid down in the National Environmental Action Programme for the period 2005-2012 (22% of protected national territory by the target year 2014, while the current share is less than 13%!).

It is clear that the national programme has remained far behind the planned targets in this respect. The objectives have undoubtedly been ambitions, also following the country's international obligations in this field (e.g. the internationally accepted programme for protected areas under the Convention on Biological Diversity) that

require signatory countries to increase the share of protected areas to 17%, depending on whether this is realistically achievable in a given local situation. With a strong support of the Government, the objective can be at least partly achieved through the successful realisation of one or two new protected areas that were in the process of establishment some time ago (e.g. Kamnik-Savinja Alps Regional Park) or their establishment was brought to a standstill (e.g. Kočevsko Regional Park and Snežnik Regional Park).

The Government supported the policies proposed in the document, thus agreeing to preserve the independence of park operators and the necessity of their integration into the local environment. Emphasis was also put on the strengthening of management and the commitment of not reducing their personnel. Moreover, the Government reconfirmed the need to continue establishing new protected areas and reiterated that protected areas were a key instrument for achieving exemplary nature conservation results and sustainable development. It also pointed to the necessity of inter-sectoral cooperation in the management of protected areas.

Not much has happened from all this and the adopted policies to improve the situation in the area. In pursuit of a greater cohesion, efficiency, improved management of the protected areas network and joint action, the operators set up the Protected Areas Association of Slovenia and implemented a number of measures to streamline the operation. The commitments of the Government and the competent ministry to increase support to the operators have more or less remained a dead letter.

## A Brief Look Ahead

Both the reduction of resources and the lack of willingness to establish new protected areas are still present, indicating a persistent shortage as also the decline in the support of the entire area of nature conservation. Nature conservation is politically undervalued, as it also applies to the whole area of environmental protection. This may be understood as a mere result of the shrinking of a welfare state of the country or as a side effect of the general policy in the field of public services aimed at streamlining, which often turns into plain vegetating and minimisation of their operation. However, striving for lower costs and a lean State leads to the destruction of the public sector and undermining of the public interest. As often stated, the consequence of the state policies hampered by the neo-liberal support to private interests, the role of the public sector is increasingly weakening to the detriment of the common good. In short, nature conservation and the fate of protected areas is only a collateral damage in this whole story.

Yet, it may be also understood as a deliberate, conscious limiting and blocking of the entire sphere of nature conservation, arising from simplistic and one-sided comprehension that its impact is simply too big and dangerous for capitalist developmental ambitions whose interventions in the environment and nature are in conflict with the strict requirements of adequate nature conservation. This implies a contradiction between the development and its limitation or guiding, which again leads to the vital premise of sustainability and the concept of environment-friendly development.

Alternatively, everything can be resignedly summarised in the conclusion that it is only a reflection of the general behaviour of man as a species who is so selfdestructive to jeopardise his own prospects by unreasonable conduct in full awareness of what awaits him. The evidence of this is the already proverbial futility of the agreements to stop global warming, since the ever more frequent exceptional weather events and other climate phenomena, which we are witnessing on almost daily basis, demonstrate that the human race is taking a shortcut to irreversible changes on the planet. But perhaps the present situation is due to a combination of everything at the same time or even something more complex. In Slovenia, we are only passengers and prisoners of such a situation, from which we do not want or do not know how to get out.

Can we, in our country, consider or plan a different route in the present crisis situation, a route where nature and the environment would become a cornerstone of our civilisation, since even during the times of "fat cows" there was no understanding and willingness to strengthen the significance of nature conservation and extend the network of protected areas, not only in protection but also in developmental terms?

Considering the options that we have there is not much room for manoeuvre. The question that plagues all responsible politicians and concerns each of us who live in this society is what the chances of Slovenia for a breakthrough from this situation are. Which way to go to preserve our autonomy in a globalised world of competition, greediness and constant forgetting that we derive from nature, that we are linked with it, while we are technologically and otherwise running away from this fact. If we wish to handle the situation soberly, we have to look far ahead, not only how we are going to spend today ad tomorrow. Therefore, in the search of solutions we have to set clear environmental objectives underpinning the future life and functioning of the society.

Therefore, solutions must be searched for in the direction of our natural advantages and social justice. One of the rare and undeniable comparative advantages of Slovenia is a relatively preserved nature. Not only Slovenia's identity and visibility abroad are based on preserved nature, but also agriculture, maintenance of population in rural areas and tourism. A future without drinking water can be very

cruel. Do we know how to protect this public wealth? Is it not that the provision of healthy food is one of the main tasks for our future, since it is proven that industrial food is harmful? Safe food largely depends on self-sufficiency, organic farms and sustainable farming, based on traditional knowledge and skills of the people. Can we, in increasingly harsh climatic conditions, afford a leisurely ease of inert industrial agriculture and uncritically demand irrigation systems for this purpose in an ever more threatening scarcity of water? What kind of agriculture to support since we are not able to utilise our own production capacities where nature still permits? Mountain agriculture is collapsing, rural population is moving to cities, while full support is given to intensive mass agriculture. Fertile land is planted with crops for energy supply purposes (biogas plants), while there is a drastic decline in food selfsufficiency. What kind of tourism can we compete with in the European and global markets, if nature, already fundamentally altered due to climate change impacts, is further disfigured into a cultural steppe, and if biodiversity is impoverished down to a few grasses and animal species? Notwithstanding the fact that nearly 100kg of food per person is discarded annually, we cannot evade from the natural, final limits of the environment and extract more agricultural products without harming the environment, ourselves and other living beings.

Hence, in its search of the economic and social model for future development, the country should rely of the principle which, in addition to the values of the rule of law and social justice, also ensures nature conservation and improvement of the environment. In such a development pattern, there would also be place for nature conservation and protected areas. Protected areas can contribute a lot to what we need in future (drinking water, preserved biodiversity, fresh air, etc.). Also, their role in the education of young people should not be overlooked, because their information centres and other information infrastructure are a large classroom for school children who are important and numerous visitors of protected areas. To the digital generation, alienated from nature and deprived of the knowledge and secrets of nature already in the regular school programme, grinding away at the human genome, protected areas offer the opportunity to meet the magic of the living world that surrounds us and of which we are an integral part. Unfortunately, very few know how important protected areas are for local economy; however, it is a fact that we can no longer imagine tourism without a network of protected areas and local economies would be much poorer without them.

## Conclusion

Nature conservation has never been a primary concern in any period of our history, while in times of crisis the situation is even worse. We may very well continue in the same direction. The matters will only get worse, and so will the state of nature,

unless we strive to protect it against short-sighted and predatory exploitation. At the time when the Memorandum was written, the state of nature was much more favourable than today, yet a clear need for its protection existed. The needs for nature conservation are now much more important and acute.

There is another option, although under different social value principles, of changing the current thinking and attitude towards the environment and nature. This can be the basis and potential for the creation of a sustainable development policy of the country. We have to take this path in order to break free from the crisis and avoid heavy, unpleasant times that otherwise lie ahead of us. Let us hope that the next generations will not have to write another Memorandum. Because it will be no longer needed!

# GORIČKO NATURE PARK Bernard Goršak

**Abstract**: The Goričko Nature Park is part of the Trilateral Nature Park Raab-Goričko-Őrség. Its sustainable mission embraces three main fields of activity: protecting the nature and safeguarding the biodiversity in the region; promoting the sustainable use of land for agricultural and other activities, ensuring the progress and welfare of the local population; and developing the cross-border cooperation between the neighbouring regions in Austria, Slovenia and Hungary.

In Slovenia, an environmentalist can hardly expect to be proclaimed the "Man of the Year", at least not in the near future, but this may very easily happen in some other western country. The image and public acknowledgment of nature protection is very different in countries where nature is not yet completely devastated, compared to countries where nature protection becomes a public necessity due to the high level of its destruction. The question is how to successfully promote the idea of sustainability as a new paradigm – especially in countries where nature seems to be unspoiled and where self-limitation in the exploitation of natural resources has not manifested itself as an inevitable consequence after a long period of degradation? In this respect, protected areas and institutions that manage them can serve as role models by implementing various projects that combine the nature protection component with economic development. At the Goričko Nature Park, several projects have already been implemented in this context.

**Keywords**: Goričko Nature Park, sustainable projects, protected areas and economy, "digital" vs. "analogue" nature, Grad Castle

## Introduction

Goričko is the north-easternmost region of Slovenia, wedged between the borders of Austria and Hungary. The name Goričko derives from the word "gorice", as the local people call the hills, formed at and later risen from the bottom of the Pannonian Sea long ago. People inhabited the softly shaped sandy terrain in prehistoric times and remained there. Although the great European cities are not far away, "progress" avoided Goričko, and thus the region has preserved the characteristic features of the Central European countryside from before the World War II.

However, something that was not so long ago considered *backwardness* turned out to be an *advantage*. Vineyards, orchards, meadows and fields are scattered like a mosaic and harmoniously interwoven with villages, hamlets and individual homesteads. Together they provide a unique image of a traditional landscape. Since the soil was poorly fertile, modesty and wisdom were required for its prudent exploitation. People have lived here in symbiosis with nature for centuries creating a diverse cultural landscape.

The highest peak reaches 418 meters above the sea level and yet it offers a view over Southburgenland (with the Raab Nature Park) in Austria and Porabje in Hungary (with the Őrség National Park) – the trilateral nature protected area which has always been a meeting point of cultures and nations.

In some places, the old rustic architecture is still preserved, as well as some crafts which have almost disappeared elsewhere. This harmonious picture invites one to take a walk among the "gorice", along streams and across meadows, along ridges and through forests. An interested visitor will be welcomed by old mills, old thatched-roof farms and numerous Protestant and Catholic churches.

One of the most outstanding historic and cultural monuments of the hilly region between the Mura and Raba Rivers is the Grad Castle in the Municipality of Grad, which is the largest feudal architectural monument in Slovenia. Historical sources first indicate the existence of the Castle in 1214. From 1333 until 1684, the castle was in the possession of Austrian Counts Széchy. Later on, the castle had several owners. After the fall of the Austro-Hungarian Empire at the end of the World War I and the inclusion of the Slovene region of Prekmurje into Slovenia (as part of the Kingdom of Serbs, Croats and Slovenes), the castle got its first Slovene owner. After the end of the World War II, the castle was nationalised. Today, its caretaker is the Goričko Nature Park Public Institute.

# Why Goričko Nature Park?

For years, Goričko was a forgotten region since the Slovene perception of Prekmurje focused mainly on the Mura River and the fertile plain along it. The course of events was slower there, and due to its isolation and the so-called Iron Curtain (former borders with Hungary and Austria), Goričko remained an isolated island with regard to infrastructure and business. Hence, Goričko did not suffer any major and violent social changes; therefore, it remained a cultural landscape in the noblest meaning of this word.

Several special features can be found there: some rocks are among the youngest in Slovenia, but at the same time some very old rocks, such as volcanic tuff, are present as a consequence of volcanic activities – the last eruption occurred 1.6 million years ago. The region has the lowest average annual rainfall in Slovenia. From the

biological point of view, the region belongs to Central Europe where the influences of the Dinaric Mountain Range, the Mediterranean and the Alps are hardly felt.

Living in harmony with nature also resulted in a great variety of agricultural land uses and a conservative attitude towards the environment. A balance between the exploitation of natural resources and human needs was established and it was quite stable for a long time. Beautiful bogs and wetland meadows along unspoiled streams were a common feature until a few decades ago when drainage of the land became more extensive. Numerous birds, which are rare in the rest of Slovenia, are still abundant here. There are as many as 174 species registered, and three of them are of international importance. Other significant wildlife species include amphibians, brook lampreys and crayfish, otter, three rare species of bats, numerous small mammals and a large population of deer. Well-preserved forests offer excellent conditions for mushrooms, ferns and other forest plants; in total there are over one thousand vascular plant species in Goričko, one third of all Slovene species; among them around 100 species are listed on the national Red Data List.

The main intention of establishing the Goričko Nature Park was to maintain a healthy environment and favourable ecological conditions for the preservation of wild animal and plant populations and to protect the existing diversity of habitats, such as meadows, orchards, marshes, ponds and others. Such a landscape also offers numerous possibilities for spending free time, recreation, research and sustainable tourism. In the late XIX<sup>th</sup> and early XX<sup>th</sup> century, the area was already widely known for fruit orchards with many different varieties which have been preserved to date.

As a public service, the Park Administration performs the following activities:

- preparation of draft management plan
- elaboration of the annual work programme and implementation of tasks determined therein
- constant monitoring and analyses of the biodiversity of the Park and preparation of reports on the conditions
- supervision of the performance and efficiency of various protection activities
- administration of the maintenance and protection of natural features
- concluding contracts on the protection actions with different stakeholders especially landowners
- collaboration with the Institute of the Republic of Slovenia for Nature Conservation and other competent national authorities in order to accomplish the protection objectives

- harmonisation and monitoring of the research work connected with the Park
- preparation and execution of various projects, especially those aiming at sustainable development in connection with nature protection
- execution of public presentations and promotions of the Park's features and plans
- ensuring the access to information about the Park and running the Information Centre
- working together with local communities to find the best sustainable development solutions
- administration of the state-owned real estate in the Park
- providing guide services for visitors
- maintaining the hiking trails and taking care of other infrastructure designed for visitors
- arrangement of natural attractions or parts of the Park for sightseeing and visiting, and
- performing other tasks in the context of protection and development which are in accordance with the Decree on the Goričko Landscape Park.

## The Grad Castle Is Becoming a Symbol of Sustainability

Some projects for the restoration of the Grad Castle were launched in late '90s of the last century. Because of its rich history, visitors from Hungary and Austria are coming in increasing numbers to visit this long-forgotten site of the old K&K Monarchy<sup>1</sup>.

After the basic restoration of the building and the proclamation of the Goričko Nature Park, a new castle manager was appointed, i.e. the Goričko Nature Park Public Institute. The organisation is also responsible for the execution of various nature protection actions within the protected area, which puts the institute in a very specific situation of being both the manager of a cultural monument of national importance and the manager of the Goričko Natural Park. Since sustainability goes hand-in-hand with nature protection efforts, it is obvious that it represents the primary objective and obligation in all actions planned and executed by the Management, including everything that concerns the Grad Castle. The managers of the Grad Castle are therefore faced with the challenge of addressing the needs, expectations,

<sup>&</sup>lt;sup>1</sup> K&K or K.-K., *kaiserlich-königlich*, meaning imperial and royal, pertains to the Austrian Empire before 1867 and to the Austrian part of the Austro-Hungarian Empire 1867–1918.

plans and demands, and even more so because the area under the protection law stretches to the neighbouring regions in Austria and Hungary. Hence, it is obvious that nature protection represents only a part of the task list; the Park's Administration also has to deal with the issues of tourism, agriculture, education, entrepreneurship, preservation of cultural heritage, etc.

Presently, a part of the castle premises is dedicated to the Institute's Headquarters, another part is open to the public and the rest is still not completely restored. The castle attracts around 20,000 visitors per year, visitors who are informed about the on-going actions, projects and plans of the Park, implying that, in addition to seeing different exhibitions and presentations of the cultural heritage, they also get acquainted with the efforts for the preservation of meadow orchards, dry meadows, wetlands, forests, cultural landscape, etc. They also get some basic information on various projects, such as cheese production, apple juice production and the regional brand, involving various producers and handicraftsmen; and even more important, they realise how all these different actions are closely related to the main aim of introducing sustainability.

Finally, it may be stated that the above mentioned represents one of the most essential aspects of the ongoing endeavour, i.e. implementation of an integrative and participatory management model as the best possible guarantee for the achievement of an even bigger goal: adopting sustainability as the way of life.

## Sustainability as the Interface between Modus Operandi and Modus Vivendi

Is it the 'way of doing' (*modus operandi*) or is it the 'way of living' (*modus vivendi*)? When it comes to the question on what ensures the preservation of the environment in the long run in relation to the economic exploitation of natural resources and other goods, the answer can be only the latter. Everyday life confirms that we are still far away from this goal and merely struggling to deal with the first one. In the best-case scenario, our<sup>2</sup> present attitude is only to some extent based on the paradigm called sustainable development. Proven by numerous cases all over the world, sustainable development is a rather vague concept, although it may appear very strict in its definitions and limitations. Consequently, decision-makers have no hard time justifying their decisions as being "sustainable" even if they are not.<sup>3</sup>

<sup>&</sup>lt;sup>2</sup> "Our" does not only mean the Western culture, but modern civilisation as a whole.

<sup>&</sup>lt;sup>3</sup> Such an example is the so-called "green energy" (wind mills, biogas power plants, photocells, etc.), allegedly very sustainable in how it is generated. Yet, the evidence shows that it is often quite the opposite. Biogas power plants are a source of very harmful emissions; photocells are degrading the countryside and have a low energy yield. Planners and investors are wondering how environmentalists can be against it – if it is sustainable and non-fossil.

Sustainability is by definition oriented towards the future. Judging our present actions from the perspective of the future generations may seem as the proper criteria for discerning which actions are "good" and which are "bad". But, from our point of view, it is incorrect to postulate based only on the current situation interpretations and assumptions about future social needs and environmental preconditions. These assumptions nevertheless may prove to be correct; however, this does not dismiss our counter-argument of a very plausible and imminent emergence of some new technologies, which will have different demands in raw-materials and energy than the existing technologies. Additionally, environmental conditions may alter in quite another direction as forecasted. Global climate changes are not a product of solely human activities; there are very powerful and influential cosmic events like solar cycles, magnetic pole shift, moon digression, and changes in Earth's axis inclination. It is not a well-known fact that at present climate changes occur on almost all planets of our solar system.<sup>4</sup>

Earth alone is a giant magnet, with hot rocks near the surface; regular exchange of ebbs and flows in the oceans carries enormous amount of energy and one hour of solar energy that hits the earth would suffice for one year of energy consumption of a big city. Electric discharge during storms may someday also be captured and saved. Not only are the conspiracy theorists those who claim that there is enormous and unutilised energy potential in vacuum.<sup>5</sup> Massive production of free-energy on a large-scale was allegedly discovered by Nikola Tesla a hundred years ago.<sup>6</sup>

The point we want to make here is not whether conspiracy theorists are right or wrong but whether the deliberations about our present actions can be made solely on the grounds of future perspective. We do not know what the future holds hidden for us. Undoubtedly, our today's actions help create the future; perhaps a more suitable expression would be *co-create*, as there are forces in nature which are equally or even more important than human-generated "future-making" processes. We only want to emphasise that a more objectively time-related definition of sustainability is needed in order to precisely discern right actions from wrong ones. The time-related definition should, according to our conviction, include the present time as its binding component.

<sup>&</sup>lt;sup>4</sup> There are several web pages on this topic, some of them not reliable. Nevertheless, one may trust the National Geographic: http://news.nationalgeographic.com/news/2007/02/070228-mars-warming.html.

<sup>&</sup>lt;sup>5</sup> The so-called zero-point energy; interesting aspects of this are the Casimir effect and "dark energy".

According to some modern theories, the latter is a predominant force in the known Universe.

<sup>&</sup>lt;sup>6</sup> For instance, ELF (Extreme Low Frequency) waves and scalar waves.

#### "Digital Nature" versus "Analogue Nature"

In 2012, the Association of Austrian Nature Parks celebrated its 50<sup>th</sup> anniversary and the German Association of Nature Parks celebrated the same in 2013. On both occasions, a question was raised about the position of nature parks within the EU in the next 50 years. At the celebration in Vienna, my statement was that I hoped there would be no parks anymore. This came as a big surprise to the audience,<sup>7</sup> but after a short explanation many agreed with my view. I explained that I hoped parks would not be needed anymore, as 50 years from now people would learn how to live in harmony with their environment and there would be no difference in the attitude towards nature whether within or outside protected areas. Ideally, people and society as a whole would voluntarily recognise and accept limitations in the consumption and exploitation of natural resources as something necessary and a self-evident precondition for a long-term prosperity.

A nature-friendly society and civilisation would be based on self-limitation as a commonly accepted norm or a way of being – as a *modus vivendi*. Yet, in my explanation, I expressed my deep doubt that such a society would come into existence before long or even in less than 50 years. It may become a reality some day, but more likely in the next century and not in a few decades. Hence, in 2062, parks will be where they are today. There will probably be even more of them. A simple reason behind such cognition is that humans, as a rule, learn by force and only after undergoing a hard lesson. We have to lose something first before we are fully capable of appreciating it. There are still many parts of nature to be degraded and pressure on exploitation of these parts by big national or international corporations will not cease in their pursuit of large profit.<sup>8</sup> Maybe exploitation will present itself in a slightly altered form due to new technologies, but it is safe to say that it will surely exceed the basic limitation, called the "carrying capacity".

In Germany there are 104 nature parks, encompassing 25% of the total national territory.<sup>9</sup> This seems not to diminish Germany's capacity of being one of the economic super powers in Europe and in the world. A similar situation can be found in France (around 17% of the whole land is protected by parks<sup>10</sup>), Luxembourg (20%), Switzerland (25%) and Austria (23%).<sup>11</sup> Are the Germans, French, Luxembourgers, Swiss or Austrians "smarter" than Slovenians when it comes to nature preservation

<sup>&</sup>lt;sup>7</sup>Even more so because I introduced myself as an environmentalist who works in a park.

<sup>8</sup> Like in the cases of Alaska and Siberia.

<sup>&</sup>lt;sup>9</sup> http://www.naturparke.de/parks/general; national parks not included.

 $<sup>^{10}\</sup> http://www.tradingeconomics.com/france/terrestrial-protected-areas-percent-of-total-land-area-wb-data.html$ 

<sup>11</sup> http://data.worldbank.org/indicator/ER.LND.PTLD.ZS

and keeping the national economy stable at the same time? Probably not. However, in these countries, a significantly higher degree of readiness to perform an active care of the environment can be observed on almost all levels of social life – from the average consumer to the highest ranking politician. Why is that so? Where does higher sensitivity come from? We believe that higher awareness and sensitivity towards nature in these countries have their own particular causes and they are not a completely spontaneous phenomenon.

One may find a plausible answer to the question above in a rather sharp distinction between devastated and not devastated nature, which is more obvious in highly industrialised countries. They are economically dominant due to a higher rate of exploitation of natural resources in the past and today, which has a long tradition<sup>12</sup> and consequently there are large areas of very degraded land; hence, it is clearer and more obvious to each and everyone what damage can be done to the environment and people by technology. Therefore, there where some areas somehow managed to remain relatively undamaged, the willingness and preparedness of the local population and politicians to undertake some serious measures to preserve them are much higher. Transition from very degraded to preserved land is quite sudden and very obvious even to the average observer. This kind of situation is like comparing day and night or 0 and 1 in the digital world.

In Slovenia there are regions where a similar "digital-like" situation has developed (Mežiška dolina, Dravsko-Ptujsko polje, the area around Šoštanj and Jesenice), although on a much smaller scale than in the above-mentioned countries. Following the analogy that land in some western countries is more digital-like, one may claim that the nature in Slovenia is predominately analogue-like. Of course, there are also substantial arguments against such an intentionally "incorrect" claim; nothing in life can be accurately explained with apparent reductionism.<sup>13</sup> However, at this point it is not our intention to research or determine each and every historical, cultural, economic, ethical or whatever reason for all the differences between Slovenia and other countries when it comes to the question of nature protection policies. It is a deliberate simplification of our reasoning with the aim to expose more clearly one of these aspects; and the aspect is represented by the ratio between two extremes: degraded and preserved land.

In many regions of Slovenia one does not even notice the difference between being inside or outside a protected area. The changes of the countryside's natural features are smooth, rarely drastic or obvious, but rather more gradual and continuous – or analogue, as we have described. Let us imagine a trip from the Kolpa River in

<sup>&</sup>lt;sup>12</sup> Of course, this tradition is longer in France, Britain and Germany than in Slovenia.

<sup>&</sup>lt;sup>13</sup> As this statement certainly is.

the South to the Krka River in the Northeast of Slovenia. We pass several regions along the way: Bela Krajina, Dolenjska, Kozjansko, Haloze, Slovenske gorice and Pomurje, crossing the motorway twice and passing a few small industrial facilities; however, there are no visible alterations in the landscape. The hills up to 1,000 meters in altitude are covered with beech forests, some small valleys with rivers and brooks are all alike; the vineyards and fields that complete the landscape are modest in size.

On this 250km long journey one passes three protected areas: the Kolpa Nature Park, Kozjansko Regional Park and Goričko Nature Park. The areas between them, such as Gorjanci, Haloze and Slovenske gorice, may seem equally preserved as the protected ones; yet they are not. This example shows how "analogue" or continuous the transition within a large portion of the country can be.<sup>14</sup> Hence, the inhabitants in protected areas often wonder why their neighbours do not live in a protected area whereas they 'must live in a park' despite the fact that their natural environment is no different from the neighbouring ones. In the light of what we just said, the question appears quite logical. More importantly, this kind of openly expressed questions and doubts by the locals cannot serve as an evidence of extreme lack of nature protection awareness among Slovenians, although to some they may seem the most evident reason for less enthusiasm when it comes to nature protection efforts in Slovenia compared to the above-mentioned countries.

Therefore, environmental sensitivity, higher awareness and preparedness to undertake actions go hand-in-hand with the share and extent of degraded environment. This may be explained as a pendulum effect: the higher the pendulum swings on one side, the higher will it swing back. Deviation from the lowest point of the pendulum, which is exactly in the middle of the swing, is therefore almost the same on both sides. Very degraded land in a neighbouring area causes a high preparedness of the locals and politicians to preserve the non-degraded land on their side. Only moderately degraded land has its counter effect, reflected in moderate preparedness to act environmentally consciously.

How can we overcome this? How can we increase environmental sensitivity before the environmental destruction increases? This can be achieved only by permanent environmental education<sup>15</sup> and learning from mistakes and experience of how not to act and by close observation of what would happen if we took the same path of

<sup>&</sup>lt;sup>14</sup> Very much alike would be an imaginary trip on the other side of Slovenia: from Suha Krajina and Notranjska to Gorenjska with the Škocjanske jame Regional and Triglav National Park; and in between the regions of Bloška planota, Nanos, the Soča Valley and Trnovski gozd, which are outstanding parts of nature, but without the nature park status.

<sup>&</sup>lt;sup>15</sup> Some thinkers like Hans Jonas believe that environmental education should be introduced already in the first grades of primary school.

destruction. However, as said, this may serve as an option only exceptionally and not as a rule; human nature is very limited in its capacity to internalise values and cognitions other than one's own, meaning that despite the efforts exercised in the field of environmental education, a further deepening of the gap between degraded and preserved land may be expected in Slovenia. Sad but true, we fully appreciate something only after we have lost it.

Therefore, the question remains whether at the turning point<sup>16</sup> the level of degradation will exceed nature's ability to recover. In ecology we use the term "viability" which describes a point of division between the populations that are able to maintain themselves under the given environmental conditions and thus continue with propagation<sup>17</sup> and the populations that have been damaged and/or reduced due to ecological devastation of the environment they live in to such a degree that they are doomed to go extinct; even if the conditions start to improve, it will be already too late.<sup>18</sup>

There must be something else besides the above-mentioned "only permanent environmental education and learning from mistakes" if we do not want to end in despair and pessimism. No pessimist has ever changed the world for the better; and our aim is<sup>19</sup> to leave this world in a little bit better shape than we found it. Therefore, we can answer: "Yes, there is something else!" And by that we mean different projects, especially those in the sphere of "agricultural entrepreneurship". What exactly does it mean?

The success of nature protection in protected areas (e.g. Goričko Nature Park) depends largely on the National Agricultural Policy. The Goričko Park is predominately composed of a mosaic cultural landscape, easily accessible, privately owned, and 100% cultivated. There is no parcel or part of the land which would not undergo the regulations within the National Agricultural Policy. This applies not only to arable land and meadows but also to forests. The synthesis of nature protection efforts and agricultural practice must<sup>20</sup> very soon become a desired result of national strategies in order to avoid massive upsets in the future.

Moreover, it is difficult to explain the ongoing pressure by big international corporations on the seed market and the compliance of almost all national authorities

<sup>&</sup>lt;sup>16</sup> It will happen sometime in the future and from there things will finally turn for the better.

<sup>&</sup>lt;sup>17</sup> Consequently, they will sustain as long as the conditions remain within acceptable limits.

<sup>&</sup>lt;sup>18</sup> This happened to the European Roller in Slovenia.

<sup>&</sup>lt;sup>19</sup> Or it should be.

<sup>&</sup>lt;sup>20</sup> Here, emphasis is put on the word *must*.

within the European Union with such intentions.<sup>21</sup> How can we explain the recent decision of the environment ministry of a neighbouring country to vote against the prohibition of pesticides causing massive bee kills?<sup>22</sup> How to achieve the desired and needed synthesis if productivity remains the main criteria for the subsidies in the next seven-year period? Simple "logic" prevails once again: the more one produces the higher subsidy one gets. In other words, this means that the more you fertilise and treat crops with biocides, the more you will be rewarded. Yes, it is "simple" and "logical", but only if we want to reach the end of our civilisation sooner rather than later.<sup>23</sup> The often exposed national food self-insufficiency, as the main reason for undertaking such actions, seems an excuse rather than an actual reason. By no means do we intend to underestimate the growing problem of safe-food shortage as a real and present threat,<sup>24</sup> but in Slovenia, with only 2,000,000 inhabitants on 20,000 km<sup>2</sup>. of which almost 40% is arable land,<sup>25</sup> there really should be no fear of starvation. In the worst case scenario,<sup>26</sup> some citizens will be forced to return to abandoned farms in the countryside and start growing crops and breeding cattle. There are many abandoned farms within a 50 km radius of every large town in Slovenia.

The situation is completely different in all large cities around the world where hundreds of millions of people daily depend on regular inflow of food produced by large farms from far and near. In this case one may urge for an awakening call for a regular supply of safe food before it is too late. If anywhere else, then food shortage will first appear as a sign of a real environmental crisis in overpopulated megalopolises.

In this sense, regions such as Goričko are much less affected and vulnerable; but in the minds of the locals this does not represent any significant advantage or even consolation. They want to reach a higher standard of living, even at the cost of devalued environment. At the Goričko Nature Park we are aware of this threat, but attacking it with all guns blazing would bring anything but good. People who feel that somebody is attacking their views (no matter how wrong their views may be) will only end in confrontation or assume passive-aggressive positions. This is the main reason for our choosing a gentler approach through the development

<sup>&</sup>lt;sup>21</sup> One of their goals may be to prevent any domestic seed storage and any private seed production.

<sup>&</sup>lt;sup>22</sup> http://diepresse.com/home/politik/innenpolitik/1398096/Wie-Bienen-Berlakovich-zum-Verhaengniswurden (December 2013).

<sup>&</sup>lt;sup>23</sup> Researchers have established that the main reason for the sudden vanishing of many past cultures in the world was in fact the disregard of nature and implosion of agriculture. Slovene philosopher Borut Ošlaj states in his work that any civilisation that refuses to incorporate nature-based ethics within its own value system as something inherent is doomed to decay and will face self-destruction.

<sup>&</sup>lt;sup>24</sup> In fact it is the opposite; without doubt, this is one of the most acute problems of the future of mankind.

<sup>&</sup>lt;sup>25</sup> http://sl.wikipedia.org/wiki/Geografija\_Slovenije

<sup>&</sup>lt;sup>26</sup> This does not include the possibility of massive immigration to Slovenia because of the famine.

and implementation of "nature-and-man" projects. Although it may be more timeconsuming, it is the only right long-term choice. At present, it seems inevitable that we have to endure numerous disappointments while pursuing our goals. The following two examples illustrate our approach.

## Projects on a Hot Tin Roof

In 2009, the project "Landscape in Harmony" (*Krajina v harmoniji*) was launched and it concluded in 2012. The main objective was to preserve and maintain hay meadows. Aware of the importance not to overemphasise the nature protection aims,<sup>27</sup> we designated supporting activities which resulted in economic benefits for the locals. In order to motivate the owners to keep hay meadows and not to abandon them, equipment for cheese production was purchased and rented free of charge. The idea was to motivate the owners to raise sheep or goats on hay meadows to produce milk and then sell it with profit to a cheese dairy.

The first problem was to get the project adopted, then to purchase the equipment and finally to find someone to hire it and launch a cheese diary. There was only one person prepared to accept the offered equipment, but there was nobody to start raising sheep or goats. Almost a year later we received reimbursement for the purchase; but this was not the end of our troubles. The cheese diary was working only at 20 percent of its capacity, but luckily, just when things seemed to get really dire, some new partners joined the business. The cheese is of excellent quality, and there is high demand on the market for such products. Although the products have reached good prices, the net income is still below zero. Nevertheless, this is not the main problem since the prospects are rather promising; the problem is that the first level control confirmed that everything had been done according to the project documentation and general regulations, but the second level control reached the decision that, in the first place, we should not have rented the cheese dairy for free.

As mentioned above, there are still more expenses than profits in the cheese diary;<sup>28</sup> besides that our institution has no human resources to run such a facility. Additionally, the cheese diary serves the public interest, which has been the main aim of the project. It is open to anyone who wants to learn more about cheese production; if one wants to observe how cheese is made he/she may pay a visit to the current tenant and ask to be shown the facility and production.

<sup>&</sup>lt;sup>27</sup> Hay meadows are the habitat of many endangered species.

<sup>&</sup>lt;sup>28</sup> It is expected that this will change in approx. five years; the economic activity seems prosperous, as it is the first of the kind in the region.

There is also an extensive public promotion of the region, the Park and natural features connected with the cheese production.<sup>29</sup> Thanks to the regional brand of Goričko Natural Park,<sup>30</sup> the awareness about hay meadows and natural potentials of the region is much higher than it would be without the project. Yet, the official audit revealed that such support to nature-friendly economy within the protected area is not in accordance with the common rules. Namely, the rules forbid any lease or sale of equipment by the owner. If the Management receives the approval of an international project, which helps to promote insufficiently exploited potentials of nature-friendly entrepreneurship, the project cannot be implemented without external assistance; but how to execute it if the permitted ways of engaging external assistance are so restricted?

Therefore, can we be successful if after hard work invested in the elaboration of the project and its adoption, the purchased hardware cannot be used by anyone else but the Park's staff? The existing regulations are very rigid and they present a major obstacle to the preparation and execution of projects. One may justify the rigidness by the argument that the lack of restrictions may create advantages for some and disadvantages for others on the market; but this can be avoided through non-profit making production and income just high enough to cover the expenses (this can be regulated by prices). What should be really important is that such projects represent a platform for public interest activities and the introduction, motivation and presentation of economic activities with positive effects on nature. Simply put – an example of sustainability at work!

To follow the next chain of events,<sup>31</sup> let us have a look behind the scene of our projects, i.e. elaboration of the project idea; search for reliable partners; building up a network of partners; defining each specific objective and financial contribution; search for co-financing sources;<sup>32</sup> submission of the project; waiting for its approval; finding a suitable project coordinator; going through an extremely demanding process of public tenders;<sup>33</sup> getting a debt permission from the Ministry;<sup>34</sup> taking the pre-financing loans, implementation of all project activities; on-time preparation and presentation of reports and documents; long waiting for the attestation of

<sup>33</sup> With a high possibility to be unsuccessful due to the complaints coming from non-selected tenderers.

<sup>34</sup> This is even harder if it takes place in a new calendar year.

<sup>&</sup>lt;sup>29</sup> Biodiversity of the meadows, especially butterflies, was the main reason behind the approval of the project.

<sup>&</sup>lt;sup>30</sup> Which is another project run by our institution in order to promote and support marketing of regional products; it also includes the dairy products.

<sup>&</sup>lt;sup>31</sup> It seems that this is becoming a regular practice in our daily work on projects.

<sup>&</sup>lt;sup>32</sup> Co-financing resources are very limited; the Goričko Nature Park Public Institute can plan further projects only in the case of 85% financing by an EU Programme, 10% national financing and 5% own financing.

reports and even longer waiting for the reimbursement of expenses; facing very strong regulations about what you may and what you may not do; and all that is accompanied by a substantial amount of additional responsibilities that one has to assume without any reward or compensation. Moreover, the one who runs such a project takes a risk of being criticised much more frequently than praised; and after one recognises that there is only a very low level of readiness for cooperation among the locals, one really starts to wonder why even bother with projects!

Unfortunately, our list of problems continues.

Another major danger for the successful preparation and implementation of projects can be best illustrated by the project called "Upkač" (*Upupa epops* or Hoopoe). We knew that the theme of meadow orchards restoration by undertaking various activities<sup>35</sup> is a relevant project topic and very likely to be adopted. It was also quite easy to set up a net of partners. Surprisingly, none of them was ready to take the role of the leading partner, and no leading partner means no project no matter how good the project idea! A leading partner must assume a greater part of the responsibility, be very professional and always on time; have experienced staff proficient in book-keeping and writing of reports and, last but not least, possess effective communication skills.

The project on meadow orchards restoration was posed with the threat of never being drafted and submitted because there was no leading partner. After a new partner had been invited to join the network of partners<sup>36</sup> and after certain modifications of the project suggested by the new partner, the project was successfully submitted and adopted.

In 2013, the project experienced one of its peaks which, as anticipated, was followed by all the above-mentioned difficulties and challenges. Nevertheless, it is probably one of the most distinguished achievements of our institution so far, representing a milestone for further enforcement of nature-friendly agricultural entrepreneurship in the region.

## Conclusion

Consumerism is probably the most widely spread "virus" among humankind. A well-known existential dilemma, as phrased by E. Fromm: "To be or to have?", is more valid today than ever before.<sup>37</sup> Our very existence is (apparently) defined by material things we possess and not by our capabilities or virtues.

<sup>&</sup>lt;sup>35</sup> Including nature-friendly entrepreneurial agricultural activities, such as apple processing.

<sup>&</sup>lt;sup>36</sup> The Regional Development Agency Mura.

<sup>&</sup>lt;sup>37</sup> Fromm, E. 2004. *Haben oder Sein*. München: Deutscher Taschenbuch Verlag.

Under these circumstances, sustainability can only serve as a tool, used occasionally in order to prevent the occurrence of hyper-production mentality. To some extent, sustainability has been recognised as something more than just *modus operandi*, more than just a "softer" and "nicer" tool to deal with over-extensive exploitation of natural resources and hyper-production. We are accepting (although slowly) the idea of how necessary it is to take the path of sustainability. We are still not ready to accept sustainability as our way of life, although we may be forced to change our attitude before long.

Basic figures and facts about the Goričko Nature Park	
Surface area:	462 km <sup>2</sup>
Municipalities:	11
Settlements:	91
Number of inhabitants:	23,418 in 6,699 families; 11,380 males and 12,038 females $^{38}$
Municipalities:	Cankova, Dobrovnik, Gornji Petrovci, Grad, Hodoš, Kobilje, Kuzma, Moravske Toplice, Puconci, Rogašovci, Šalovci
Manager:	Goričko Nature Park Public Institute <sup>39</sup>
Percentage of Natura 2000:	100 % of the Park's area

<sup>&</sup>lt;sup>38</sup> Census 2002: Statistical Office of the Republic of Slovenia.

<sup>&</sup>lt;sup>39</sup> The HQ are located in the Grad Castle.
# THE STORY OF ŠKOCJANSKI ZATOK NATURE RESERVE Nataša Šalaja

**Abstract:** Škocjanski zatok is a Slovenian coastal wetland located near the city of Koper, designated as a state nature reserve and open to the public since 1998 as a result of the civil society's years of struggle. Such an effort was warranted as the local authorities intended to urbanise the site which would have led to a complete loss of its natural value. The civil society led by DOPPS – BirdLife Slovenia proposed a different future for this area: to halt its degradation, protect and restore it to the pristine conditions prior to its decay. DOPPS were successful once state authorities accepted their proposal after a broad public campaign in 1993.

After years of research, project preparation and its restoration in 2006-2007, Škocjanski zatok was reestablished as a semi-natural ecosystem which is able to function with the support of human management. As such the area regained its place among the important protected areas and Natura 2000 sites as an area of high natural richness and biodiversity, particularly of birds, inhabiting diverse habitats: a brackish lagoon with breeding islets, saltmarshes and mudflats overgrown with a variety of halophytic plants, a freshwater marsh with wet meadows, open water areas surrounded by reedbeds and termophile shrubs.

Due to the extreme unsustainability of the use of natural resources in the Škocjanski zatok area prior to its designation as a nature reserve, the area itself was a symbol of sustainable spatial development, bringing positive effects to the region. Further on, for the first time in Slovenia, protected area management was organised outside the public sector and the management of such a reserve was granted to an NGO when, in 1999, the Slovenian Government selected DOPPS – BirdLife Slovenia as a reserve manager. The future of the area is in its final organisation and it will become a wetland centre focusing on visitors especially with the construction of the visitor facilities, including a visitor centre which is planned to be completed in 2015.

Keywords: Škocjanski zatok, brackish wetland, freshwater marsh, restoration, birds, wetland centre

# Background

Since ancient times, the wider area of Škocjanski zatok has been shaped by man and natural factors. Throughout the centuries, an area of exquisite natural richness has developed nearby Koper/Capodistria, at the junction between the land and the sea. This is a win-lose story of Slovenian nature: by the beginning of the third millennium,

the destructive activities of the local municipality had left Škocjanski zatok in a very poor condition. It survived thanks to the environmentally-aware members of civil society led by DOPPS – BirdLife Slovenia (also referred to as DOPPS) that stepped forward as nature's advocates showing the Slovenian public that it was intolerable to destroy a natural heritage area of such richness and diversity.

Their proposal consisted of a different future for the site; such a development started to fructify after the designation of the area as a nature reserve in 1998. An extensive restoration of the reserve, led by the Ministry of the Environment and Spatial Planning and DOPPS as the reserve manager, was completed in 2007. The restoration included the regulation and enhancement of freshwater, seawater and brackish habitats. By the first spring after the restoration the reserve was again full of life, filled with nesting birds – the number of observed bird species since then has raised to over 240 species, which is over 60% of all the birds ever recorded in Slovenia. Positive thinking and huge amounts of creative energy did eventually bore fruit, and since then Škocianski zatok has been known far and wide as a story of success. Restoration of habitats coincided with the completion of the first phase of visitor infrastructure: a circular educational trail with four observation spots was laid out around the freshwater marsh in the Bertoška bonifika area. The visitor centre, observation points and other structures designed to enhance visitors' experience of nature would be built and should be in use by mid-2015. This is a basic precondition to be met for the functioning of nature reserve as a wetland centre and is also the main priority for the period 2014-2020.

Today, Škocjanski zatok is one of Koper and its surroundings' centres of sustainable development. The reserve is proud to meet all equal opportunity standards as its organisation and programmes are fully adapted to target groups, including special needs' groups. In addition to raising the settlement culture of the city to a higher level and contributing to a better quality of local people's life, the Škocjanski zatok Nature Reserve has increased the added value of Koper from the spatial point of view. Nearing its final form, the reserve is becoming a new destination of quickly developing nature tourism. It has already attracted sustainably-minded and environmentally responsible visitors. On account of its model value and high restoration costs, the Škocjanski zatok Nature Reserve is a reminder for the Slovenian and international public of the importance of preserving natural environments.

#### **Designation of the Protected Area**

Škocjanski zatok received its first temporary designation as a natural monument in 1993 following the DOPPS' conservation efforts in time when the degradation processes due to the municipal urbanisation plans threatened to completely destroy the area. DOPPS prepared an exhibition about Škocjanski zatok which was accompanied by a petition to protect the area and was signed by 7,000 people. After this, the request to stop the harmful activities in Škocjanski zatok was sent to the national government which decided that such destruction of the natural environment was not tolerable anymore and therefore adopted the first Decree to officially protect the site. Temporary designations were prolonged annually for a period of 5 years followed by an announcement regarding its permanent protection with the designation of Škocjanski zatok as a *state nature reserve open to the public* (IUCN category IV) based on the Act on Škocjanski zatok Nature Reserve, adopted by the Slovenian Parliament in 1998. This was the result of years of struggle of the environmentally-aware members of civil society, led by DOPPS – BirdLife Slovenia to stop its degradation, protect and restore it to the conditions prior to degradation.

The designation objectives were in close relation to the then conditions of the site and were divided into:

- the conservation objective which meant to restore, enhance and conserve the habitats of endangered animal and plant species in the Škocjanski zatok Nature Reserve: consequences of the past had to be eliminated and the typical landscapes and ecosystem restored, and
- the development objective which meant to organise the area as a nature reserve open to the public enabling research and educational activities as well as experiencing nature.

# Main Features of the Area

Škocjanski zatok is the largest brackish wetland in Slovenia. Together with its surrounding areas, the wetland is an ecosystem of great value to Slovenia, its uniqueness deriving from its proximity to the sea, Mediterranean climate and submediterranean vegetation, as well as its organisation and size. Various depths of the brackish lagoon and high diversity of habitats – ranging from wet meadows, shallows and mudflats, tidal areas, shores and a brackish marsh to reedbeds and a freshwater marsh – provide for a high diversity of plant and animal species. The reserve consists of two parts:

- a brackish lagoon with breeding islets, saltmarshes and mudflats overgrown with a variety of halophytic plants, and
- a freshwater marsh with wet meadows, open water areas surrounded by reedbeds and termophile shrubs.

The designation was based upon the exceptional biodiversity of the ecosystem before degradation, supported by the following data: 41% of all Slovenian amphibians, 41% of all reptiles, 55% of bird species and 36% of mammals living in Slovenia were present in the Škocjanski zatok and its adjacent area. Based on the same evidence, the area was also declared an ecologically important area and a natural value according to the national legislation. Škocjanski zatok is currently designated as a:

- nature reserve from 1998 based on the Act on Škocjanski zatok Nature Reserve, adopted by the Slovenian Parliament (Official Gazette of the Republic of Slovenia, No. 20/98)
- ecologically important area no. 77600 upon the Decree on ecologically important areas (Official Gazette of the Republic of Slovenia, No. 48/2004)
- Natura 2000 site Special Protected Area (SPA) upon the Decree on special protection areas (Natura 2000 sites) (Official Gazette of the Republic of Slovenia, No. 49/2004) and Special Area of Conservation (SAC) upon the update of the same Decree (Official Gazette of the Republic of Slovenia, No. 8/2012)
- natural value geomorphologic, hydrologic, botanic, zoologic and ecosystem value upon the national Rules on the designation and protection of valuable natural features (Official Gazette of the Republic of Slovenia, No. 111/2004).

The restoration of the area carried out by the ministry and reserve manager in 2006-2007 has resulted in the establishment of a rejuvenated semi-natural coastal wetland ecosystem, landscape and its natural processes, conservation and enhancement of the typical wetland brackish and freshwater habitats, and the organisation of the nature reserve for visitors enabling education, recreation and nature experience. To illustrate this success with birds data, the after-restoration numbers of observed species already exceeded the pre-degradation ones with over 240 bird species observed (over 60% of all birds ever observed in Slovenia) in the last decade. With the completion of the restoration, Škocjanski zatok regained its importance as a natural area – an oasis on the doorstep of Koper – contributing towards the quality of life and sustainable development of the city of Koper and the Slovenian coast in general.

# Socio-Economic Characteristics and Importance of the Area from the Sustainable Development and Resources Use Point of View

The degradation of the natural environment as it evolved in the wider area of Škocjanski zatok beginning from 1970s until early 1990s is undoubtedly an example of an extremely unsustainable use of natural resources. During the period after

the independence of the country while the Slovenian society was in transition, such harmful activities were considered intolerable by the individuals with high environmental awareness who gathered under the umbrella of ornithological NGOs such as DOPPS and Ixobrychus until it gave rise to the nature conservation movement of the civil society in 1993. This finally resulted in the official protection of Škocjanski zatok as a nature reserve.

Since the designation of the nature reserve, it has focussed on remedying the old environmental burdens consequent to the past degradation of the site. The situation in the early 1990s was quite serious: over 280,000 cubic meters of mud were disposed to the brackish lagoon thus destroying the original bottom and its biodiversity, causing eutrophication and organic pollution of the lagoon, which at the same time was left without the inflow of river waters that were diverted to other directions. Also the low oxygen levels contributed to the very poor ecological conditions of the lagoon. The water circulation was insufficient. The freshwater marshes, which used to stretch along the old river mouths, were completely lost.

The consequences of the existing environmental burdens were eliminated in the period 2006-2007 through the removal of organically polluted mud which resulted in reduced eutrophication and organic pollution, increased bioproduction of the lagoon, increased fresh and sea water inflow to the lagoon and the related improvement in its ecological conditions. The freshwater marsh was recreated in the abandoned agricultural land of Bertoška bonifika. The organisation of the reserve enables that the wildlife is not disturbed by human presence.

The restoration was intrinsically focused on the enhancement of the environmental, social, economic, cultural and aesthetic values of the natural ecosystem. Through the restoration of the natural habitats of plants as well as bird and other animal species, the complete coastal wetland landscape was restored as a semi-natural ecosystem which is able to function with the support of human management. In the very urban surroundings it has a substantial aesthetic value for the local people and visitors the recent identification of the ecosystem services of the nature reserve revealed that the real estate with a view over the reserve can have up to 20% higher sales value comparing to the ones without view. From the reserve, one can now have the karstic hills and valley view of the hinterland and also the "veduta" to the city of Koper, showing its island character which unfortunately was almost lost due to the urbanisation of the area between the old town and the reserve where huge shopping centres were built thus closing the view over the old town. The socio-economic and cultural value of the Škocjanski zatok landscapes is enhanced by the fact that the reserve is open to the public since its designation in 1998. After the completion of the restoration in 2008, it started offering local people and visitors the possibility of

an excellent nature experience using the observation points around the education trail which allow people to get very close to nature, protected plants and animals nearby. The ponds along the trail share the same function serving the visitors as live models of the marshes. The recreated landscapes of Škocjanski zatok therefore serve as an education and research ground as well as a place of quiet recreation and development of nature tourism.

Due to the extreme unsustainability of the use of natural resources in the Škocjanski zatok area prior to its designation as nature reserve, the area itself can be seen as a *symbol of sustainable spatial development*. Its model value and high price of restoration, which amounted to EUR 3.1 million, reminds the Slovenian public of the importance of nature and landscape conservation. At the same time it constitutes a reminder to avoid further nature degradation not only in Slovenia, but throughout Europe. It is a lesson in the wise use of wetlands as promoted by the Ramsar Convention on Wetlands and also in elaborate and efficient treatment of space, nature and landscape thus highlighting the importance of good Environmental Impact Assessments to avoid the natural environment degradation (preventive approach).

In the history of Škocjanski zatok distinct components of unsustainable development as practiced in the past by the local government can be observed and in contrast sustainable ones can also be traced back to the civil society movement in 1990s and the consequent announcement of the state environmental policy decisions including the protection and enhancement of the important natural areas from 1993 onwards. The Act on Škocjanski zatok Nature Reserve with its implementing regulation was a basis to protect and restore the Škocjanski zatok area. Also the National Environment Protection Action Programme (Official Gazette of the Republic of Slovenia, No. 83/1999) stipulated the restoration of Škocjanski zatok as an important task among the activities in the field of biodiversity and genetic pool protection. The duration of all administrative procedures regarding the restoration and establishment of visitor facilities unfortunately indicates that the Slovenian environmental policy is rather weak and the reserve organisation moves on only because of the enormous inputs made by the dedicated ministry, institute's officials and the efforts of the reserve manager.

The Slovenian coast, part of the Coastal-Karst region (in Slovene *Obalno-kraška regija*), is one of the most developed regions in the country, being the second after Central Slovenia (in Slovene *Osrednjeslovenska regija*) that hosts the capital Ljubljana. The Slovenian short coastline is quite urbanised and the location of the nature reserve in such an environment on one hand is a positive component for the inhabitants and visitors as a green area of great natural value, while on the other hand its adjacency to urban areas brings some negative impacts to the site mainly

through the inflow of waste water, noise and light pollution. The Statistical Office of the Republic of Slovenia published "The Sustainable Development Indicators for Slovenia" in 2010 (Suvorov M., et al 2010), but very few comparisons were made at the level of regions or towns. Within the well-being indicators group according to the natural resources quality Koper secured the best score in the presence of PM10 particles and the worse one in faecal pollution of the drinking water with E. coli in comparison with other main Slovenian towns. Under social indicators, the number of students per capita in the Coastal-Karst region is under the state average and among the lowest in the country. Anyway, no further conclusions can be drawn based on this limited information. A bit more encouraging is the fact that the national Decree on Methodology for Determination of Municipal Development (Official Gazette of the Republic of Slovenia, No. 3/2011) involves the share of Natura 2000 areas among the development potential indicators. The development of regions was established using the same methodology within the Decision on the classification of development regions according to their development level for the programming period 2007-2013 (Official Gazette of the Republic of Slovenia, No. 23/2006) and within this perspective, Škocjanski zatok together with other Natura 2000 sites of the Coastal-Karst region can be seen as one of the contributing components towards the high development degree of the region.

Coastal wetlands are a rarity in the Slovenian short and steep coastline. Consequently, their national importance is very high, as is the need for their long-term conservation and management, especially because all wetland areas – Škocjanski zatok, Sečovlje and Strunjan Salina – have been adversely affected by man since the distant past. Just in time, Slovenia took over the responsibility for protecting its national natural values and designated all of them as protected areas and Natura 2000 sites.

# Management of the Area with the Inclusion of Local Community and Civil Society

As pointed out before, the designation of the site was initiated by the civil society group, which includes mainly the local people whose public participation was a factor in the decision-making process. It was the civil society which managed to achieve the first temporary legal protection of the site in 1993 and since then it has gained much kudos in achieving its permanent protection as a nature reserve in 1998. Though finalised by the governmental sector, the designation of the site can be ranked among the rare civil society projects in the field of nature conservation in Slovenia.

Due to the past degradation and its location in the vicinity of an urban centre, Škocjanski zatok has been restored as a semi-natural ecosystem. In achieving its development

goals it needs to be managed and maintained as a favourable conservation reserve of protected habitats and species. In 1999, the Slovenian Government granted the management licence over the nature reserve to DOPPS – BirdLife Slovenia. For the first time in Slovenia, protected area management was organised outside the public sector and granted to an NGO. By signing a 10-year contract, DOPPS accepted to carry out the management of the site as well as participate in its organisation, fundraising for and implementation of the restoration works and the establishment of visitor facilities.

The restoration of the nature reserve was partly co-financed by the EU funding instrument for environment Life, with DOPPS acting as project beneficiary. The same project included the production of the site management plan for the period 2007-2011, one of the first such documents elaborated in Slovenia. The adoption of the plan by the national government in mid-2007 was also a guarantee that sufficient funding would be available for the site management measures planned to be carried out throughout the planned period, ranging from the surveillance service, work with visitors, including informing and educating of all target groups, monitoring and research, maintenance of the facilities and habitat management. The last area of work demanded the manager's special attention in the first years after restoration when the planned management measures had to be tested and verified. In the freshwater part of the reserve called Bertoška bonifika the vegetation is maintained with a combination of grass cutting, grazing and the management of water levels using an infrastructure set during restoration. A tractor with its needed attachments was bought and a grazing herd, consisting of autochthonous cattle breed and Camargue horses, was brought, both cattle and horses being adopted to live and graze in marshland. The necessary stable will be built together with the visitor facilities by 2015. Special measures were also set to control and limit the invasive species. Thus Škocjanski zatok is not just a diverse wetland and a school in nature, but also a farm.

The management of the brackish lagoon is of particular importance during the breeding season from April to July every year, when the water levels are controlled by the sluice at the end of the water channel, connecting the lagoon with the sea. A few years of observation were necessary to understand the functioning of the lagoon according to the tides, weather conditions and other influences, and thus be able to set the automatic functioning of the sluice correctly. At the same time, the cooperation with all the stakeholders influencing the quality and quantity of water flowing to the reserve is necessary, particularly due to the fact that the area does not have a buffer zone with the management adapted to the nature reserve needs. Due to its vicinity to urban areas it is exposed to various types of pollution and similar negative impacts.

The restoration of the Škocjanski zatok Nature Reserve as a first step of its management was a pilot project in Slovenia and so no comparable experience of such activities and procedures was available prior to the beginning of the project. It undoubtedly ranks among the top restoration projects of degraded natural areas in the Mediterranean part of Europe. As such, it offers a unique reference for potential further restoration projects elsewhere in the country and at the international level as well as for the successful engagement of the civil society in nature conservation work. The story how the project came into being indicates that civil society can play a crucial role in sustainable development and nature conservation, environmentally-conscious individuals acting as advocates of nature. The ecosystem approach was used during the planning, designing and implementation of the restoration activities which is a direct in-situ implementation of the CBD as well as the EU Bird and Habitat Directives. The approach can be directly adopted by similar projects in other protected or high-value nature areas.

The restoration of Škocjanski zatok is one of the best examples of successful cooperation among the governmental sector, including the Ministry of Agriculture and the Environment and the Piran Regional Unit of the Institute of the Republic of Slovenia for Nature Conservation (IRSNC), and the non-governmental one with the reserve manager, particularly in the nature conservation field in Slovenia. Without good, regular and active cooperation within this partnership, this success story would have never happened. The added value of the partnership and its importance in the success of the project is visible through this sharing of knowledge and experience from the existing BirdLife International partnership and the newly established informal network of North-Adriatic wetlands' managers – Adriatic Wetlands for Natura 2000 (Adriawet 2000). Both networks also serve as excellent examples of the importance of sharing knowledge and expertise, and work together since with such synergies much better results can be achieved as compared to individual efforts.

# The Contribution of Škocjanski Zatok Towards the Sustainable Development of the Local Area

The Škocjanski zatok Nature Reserve is located within a dense urban environment which gave it its popular name "Oasis on the Doorstep of Koper". The residents of the town of Koper, which is developing from a predominantly trading town into a university centre, need green areas and space for relaxation and recreation. Before its start, the majority of residents were in favour of the idea of reserve restoration, but also sceptical because of the length of time needed to prepare the restoration project. We can assume that the promotional and awareness-raising activities carried out by the reserve manager have brought the functions of the reserve closer to the

local people. Many of them have recognised its real value and have become active stakeholders in the nature conservation on their doorstep.

As highlighted in the previous chapters, two best practice cases were developed during the history of Škocjanski zatok:

- 1. the designation of the site following the active nature conservation movement of the civil society, led by environmentally conscious individuals from ornithological NGOs, and
- 2. the restoration of the area given the successful cooperation between the governmental and non-governmental sectors, being occasionally obstructed only by the long duration of the project preparation and implementation which in no way can dilute the general success of the project.

The area of 122 hectares wetland is not inhabited but due to its location in the urban surroundings of Koper, it still positively influences the sustainable development of the local area (DOPPS, K&Z d.o.o. 2013):

- It contributes to a better quality of life of the local people: first, as a wetland in the proximity of an urban centre, it contributes towards a nicer and healthier environment, lower pollution rates, thus improving the environmental indicators; second, it offers cultural, intellectual and spiritual inspiration and relaxation, a high-quality nature experience as well as guided tours and other educational activities to the locals and other visitors and consequently helping to maintain a healthy population.
- It increases the added value of Koper from the spatial point of view bringing a
  natural component to a relatively urbanised part of the Slovenian coast which
  improves the diversity of space use and conserves the elements of Koper history
   Škocjanski zatok is proof enough that Koper developed as an island town and it
  is only here at the inflow of Rižana and Badaševica rivers to the sea that the past
  natural landscape is preserved.
- The reserve is becoming a new destination of a fast developing nature tourism attracting responsible visitors and helping to extend the region's tourist season as the reserve is becoming a point of interest beyond the summer season; the recent calculations also show that increased tourism consumption can be expected after the construction of the visitor facilities through direct spending at the site and indirect consumption in the local tourism service sector, estimated at EUR 383,990 annually, and is expected to be reached in five years after the visitor centre is put into use.
- It meets all equal opportunity standards for special needs' groups (disabled, blind, deaf).

- It is situated on the doorstep of the Slovenian coast and it is also an invaluable asset in the promotion of other sights in the area.
- It contributes towards flood safety of the local urban areas and infrastructure of approximately 93 hectares.
- Besides the focus on natural heritage, its conservation and interpretation, it also enables the conservation of the cultural heritage of Istra region, such as the autochthonous Istrian cattle breed, Istrian donkeys, as well as autochthonous plants combined into an interesting interlaying of attractions in the region.

#### Priorities for the Period 2014-2020

With the renewal of the degraded and destroyed habitats of Škocjanski zatok, the nature reserve's conservation goals were reached and long-term preservation of the protected habitats and species enabled. This however does not mean the end of its work; it will continue until the visitor facilities are built. The visitor centre, observatories and educational trails rank among the most important ones, are planned and partially already built in two zones open to visitors: the majority at the edges of the freshwater marsh in Bertoška bonifika area and the remaining ones on the northwestern coast of the lagoon, allowing the inhabitants of Koper to make a short walk to the reserve. The construction and putting into use of the visitor facilities with the development of different visit programmes are the main priorities of the responsible ministry and reserve surveillance and monitoring to sustain the favourable conservation status of protected habitats and species.

At the moment, the local people of the Slovenian coast are the most numerous visitors to the area with over 2,500 pupils and students attending the educational activities organised and carried out by the reserve manager. After the construction of the visitor facilities, the number of visitors is expected to increase as Škocjanski zatok would be widely promoted as a wetland educational centre offering a range of visit programmes to satisfy different segments of visitors. The share of tourists is expected to increase within the total number of the visitors.

The visitor facilities will enable the implementation of all the planned programmes for the visitors, including education, research as well as cultural and other events, such as seminars, workshops, exhibitions, youth camps and other programmes tailored according to different target groups. The visitor centre will be the most important building joining the facilities for the visitors and for the reserve manager. Nature friendly, educative and promotional items will be available at the reserve's shop and basic refreshments at the snack bar. For our young visitors, which are one of the important target groups, a specially dedicated open area will be established nearby the visitor centre, area that will join playground with classroom in nature activities. The central observatory will be constructed at the natural border between the freshwater and brackish part of the nature reserve and will provide views of the whole reserve surface as well as the underwater views of the freshwater marsh. Education trails and some of the observation points have been opened in 2007 providing visitors with a basic interpretation and enabling a close view to the marshes, meadows and the lagoon environments. At the same time, the additional screening, consisting of embankments and vegetation along the trails and wooden walls with observation lines at the view points, shall prevent the disturbance of the wildlife due to the presence of the visitors.

After the construction of the visitor facilities, the restored Škocjanski zatok will be organised as a wetland centre – classroom in the nature – to educate the public about the importance of wetlands, their preservation and effective use. Rather than relying on legal prohibitions, we should strive towards long-term values such as love for nature and respect for other living beings on this planet as well as the preservation of nature for future generations. In Škocjanski zatok, these values were put to a test, and came out victorious. Today Škocjanski zatok and its story of success give us hope for a better future of nature conservation in Slovenia.

### **Basic information**

Name: Škocjanski zatok Nature Reserve Location: South-western Slovenia, near Koper Area: 122 hecates (1.22 km2) Declared in: 1998 Designations:

- Nature reserve
- Ecologically important area
- Natura 2000 site (SPA and SAC)
- Natural value

Reserve manager: DOPPS – BirdLife Slovenia

Public body, responsible for conservation issues: Institute of the Republic of Slovenia for Nature Conservation (IRSNC) Web site: http://skocjanski-zatok.org/

Email: skocjanski@skocjanski-zatok.org

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# ŠKOCJAN CAVES REGIONAL PARK PROTECTED AREA, INTERNATIONAL RECOGNITION AND TOURIST DESTINATION Gordana Beltram

Abstract: Regijski park Škocjanske jame (Škocjan Caves Regional Park) is a protected area according to the Slovenian legislation; it is also an important area worldwide and it figures on the lists of the World Heritage and Ramsar Conventions and the UNESCO MAB Programme. It is situated in South-West Slovenia. Its management is taken as an example of good practice which perhaps can be considered by other such areas and its experience shared as well. In 27 years, the World Heritage Property (WHP), later also the Ramsar Site (RS) and the Karst Biosphere Reserve, all nominations have contributed to Škocjan Caves area becoming well-recognised internationally, but considered less important at the national and local levels. In addition to its primary conservation and education objectives, it is an important tourist destination and helps sustainable tourism development which in its turn provides a considerable financial resource for the achievement of the Park's primary objectives. The highly professional and dedicated team of the public agency Park Škocjanske iame. Slovenija (Škocjan Caves Park Public Service Agency, Slovenia), together with local people in the protected area and its buffer zone, local municipalities and different experts, work to implement and achieve the objectives adopted by the fiveyear Programme for the Protection and Development of the Škocjan Caves Park (management plan) and further its annual implementation plans.

**Keywords**: legal framework, site conservation, management plan, buffer zone and sound management, natural and cultural features, revenues for nature conservation, awareness raising/environmental education, sustainable development, local communities and businesses involvement

#### Introduction

Škocjan Caves Regional Park was established in 1996 as a response to the enlistment of the UNESCO World Heritage Property (WHP) in 1986. The core area includes one of the largest known underground canyons in the world, as well as two spectacular collapse dolines where the Reka River enters the cave system. The sinking river within immense dolines and caves with large underground chambers provide a habitat for a number of plant and animal species. The caves and the landscape that surrounds them are settings of extraordinary natural beauty. The protected area of the Škocjan Caves Regional Park also includes three villages rich in cultural heritage and monuments, whilst the buffer zone extends over the entire Reka River basin.

In 1996, the Škocjan Caves Regional Park Act (Official Gazette of the Republic of Slovenia, no. 57/96) was adopted by the Slovenian Parliament to provide the legal basis for the protection and management of the site. It established a strict protection regime for the cave system and its immediate surroundings including three villages (413 ha of the WHP), and a rather soft regime in the buffer zone covering the river basin of the Reka River (45,000 ha). The Regional Park is managed by the Public Agency (Park Škocjanske jame, Slovenija) responsible for the management and supervision of the protected area. Its main objectives include the conservation and management of nature and cultural heritage as well as their continuous research, monitoring and analysis. The Park, inter alia, also promotes the protection of the area, education about the Park and raises public awareness about the importance and role of nature and its ecosystems, flora and fauna, as well as cultural sites and the typical karst landscape. It closely works with and provides professional assistance to the owners of individual cultural monuments located in the protected area. It also guides and supervises visits to the Park and to the caves, and participates in international projects.

According to the adopted legislation, the Park also supervises all activities in the buffer zone that are likely to alter the water regime and the water quality of the Reka River. With the exception of flood protection measures, all other activities are prohibited. Additionally, any other activity affecting the environment representing a risk or danger to the protected area and causing harmful impact to the protected area is also forbidden.

Although Škocjanske jame (Škocjan Caves) have already been registered in the World Heritage List in November 1986, it is still the only area in Slovenia inscribed in the world heritage list as a natural property. Since 1999, the area is one of the three Slovenian Ramsar Sites and since 2004 it is a UNESCO MAB Karst Biosphere Reserve. Consequently, the area of Škocjanske jame is one of a few areas with all three international nominations. The objectives of the two intergovernmental conventions and the UNESCO programme have been implemented hand in hand with the protected area objectives assisting the Park in raising its recognition and importance locally, nationally and internationally.

The Park receives between 95,000 and 110,000 visitors each year. The income generated by tourism provides for over 50% of the Park's budget. In addition to the funds received from the State budget and several national and international projects, tourism is the main provider of financial resources for conservation of natural and

cultural heritage in the area. In return, the Regional Park is the leading attraction and one of the key resources for the sustainable development of the region, particularly in the Municipality of Divača. Therefore, conservation, monitoring, raising awareness and working with local communities continue to be the main priorities for the management and development of the Regional Park.

## The Main Characteristics of the Area

The Škocjan Caves Regional Park is situated in South-West Slovenia. The protected area covers the most south-eastern part of the Karst region including the cave system, several collapse dolinas and the canyon of the Reka River, as well as the three small villages (74 inhabitants) above the cave system. The buffer zone extends from the protected area to the Croatian border, covering the whole catchment area of the Reka River and together with the transition zone of the Karst Biosphere Reserve the area embraces six municipalities, 97 settlements and 17,111 inhabitants.

Škocjanske jame are a system of a long and deep underground canyon (up to 146m height and 123m wide), of vast halls (the volume of one of them exceeds 2,200,000m<sup>3</sup>) that are cut into a limestone bedrock by the Reka River and characterised by 6km of underground passages reaching a total depth of more than 200m. The rich biodiversity is a result of specific conditions in the collapse dolinas and the underground environment. The temperature inversion in the deep collapse Velika dolina on the one hand and the warm air at the entrance of the Reka River to the cave system trigger particular habitat conditions where the Alpine flora (a relic from the ice age) and Mediterranean species are growing at short distances. Additionally, the cave environment holds a number of cave species, including *Proteus Anguinus*. Several species of bats, also hibernating and breeding in certain parts of the cave system, are an important indicator of the quality of natural environment and ecosystems.

The pioneer research of the karst phenomena started in Slovenia in the Kras/Carso (Karst) region. Many expressions like karst or doline, nowadays used in speleological terminology worldwide, originated in the Slovenian language.

Part of the rich cultural heritage of the area are impressive archaeological finds, dating from the Neolithic to the Bronze and Middle Ages, indicating the importance of the site in the past for settlements, burial grounds and rituals.

The main natural characteristics of the buffer zone are the Reka River and its tributaries – the water resources of the area, the river and the riverine ecosystems and the dense forests on Mount Snežnik. It is a rural area, with one small town, Ilirska Bistrica, situated close to the Croatian border.

### Management of the Škocjan Caves Regional Park

The conservation of the natural and cultural assets is the primary mission of the Public Agency Park Škocjanske jame, Slovenija (Škocjan Caves Park Public Service Agency, Slovenia), established in 1996 to manage the Regional Park. The fundamental natural and cultural protection goals are supported and enhanced by increasing efforts to ensure the sustainable development of the wider area, including the Park's buffer zone, essential also for the implementation of the Ramsar Convention and MAB Programme objectives.

With the registration of the area in the internationally important List of Wetlands in 1999, Škocjanske jame became an excellent reference example of underground wetland characterised by its hydrological and biological values. Additionally, the Man and Biosphere Programme (MAB) in 2004 strengthened its aim in achieving sustainable development in the protected as well as in its larger buffer zone area. It has been an excellent basis for enhancing the recognition of Škocjan Caves and their importance at the local, national and international levels. Working with local people, schoolchildren and professionals, the Park has managed to effectively conserve and protect the karst area as well as its larger hinterland.

Trained wardens and tourist guides have the greatest influence on how the visitors experience and perceive all the beauties of the site. Additionally, local people provide authentic lodging and homemade gastronomic specialities. The buffer zone is defined by the law of the Škocjan Caves Regional Park. Even though this is not a protected area, it has an important role to play in its future developments. Therefore, cooperation with *local people* both in the core area and in the buffer zone is of utmost importance. The Park's trademark has been designed in order to connect the protected area better with the larger domain and its larger hinterland. Based on principles of sustainable development it will also improve monitoring activities, nature conservation, education and heritage protection. Additionally, education about the Park and raising public awareness, working with young people, particularly through the network of schools of Park Škocjanske jame, training the guides and wardens are all activities aiming at a better understanding of protected areas, biodiversity conservation and the role of humans in safeguarding our natural and cultural heritage. Consequently, since the establishment of the Park, the protected area has changed and improved considerably having renovated and well-maintained infrastructure, restored houses, while the settling of young families in the villages contributing to the number of inhabitants increase.

The school network of Park Škocjanske jame (including five primary schools in Slovenia and two in Italy) encourages schoolchildren to actively research, monitor

and safeguard their environment, the natural and cultural heritage, and share their work with their schoolmates locally and internationally. In 2013, the Park celebrated the tenth anniversary of the Schools Network. It has been focusing on sustainable development, education, knowledge and understanding of how nature works as well as promoting the Park. In 2011, the Ramsar Convention on Wetlands and MAB Programme celebrated forty years of raising awareness about the importance of nature and the necessity to conserve and use natural resources sustainably. The Park provides the main link between primary schools in the catchment area situated upstream of the protected area and the two schools downstream of the protected area, in Italy. The Park and schoolchildren are yearly involved in research projects on different issues presenting the results at the youth congress taking place in the beginning of June every year in the past four years, organised by the Park management. Additionally, the Park facilitates education, training as well as raising awareness of the importance of nature and of the cultural heritage. Consequently more and more schools nationally and from different European countries are visiting the protected area.

Moreover, the main economic activity in the protected area is tourism. In the 1990s, about 40.000 tourists visited Škocjanske jame yearly. Nowadays, this world heritage site receives between 95,000 and 110,000 visitors each year (over 111,000 visitors in 2013). The yearly income generated by the entrance fees and souvenir shop provides for more than half of the Park's annual budget. Since its establishment, the Park has increasingly provided more and more jobs and employment in the region. Also, it has locally generated financial resources for the improvement of infrastructure in the three villages within the protected area. On the one hand, the Park has improved existing or developed new tourist facilities, including a visitor centre and museum collections, as well as walking and cycling trails. These facilities, combined with the excellent information and interpretation of the heritage narrative for visitors, are important in maintaining the caves as a major tourist attraction, and consequently, for generating a significant income that is used for the management of the Regional Park. On the other hand, a part of the income is also distributed to local inhabitants for the maintenance of the typical karst architecture and cultural landscape. Therefore, in addition to its own developments, the Park has invested from its own revenues more than 475,000 EUR into buildings and infrastructure of the three villages within the protected area between 1999 and 2013. In four of the renovated buildings owners also provide accommodation for tourists. One of them is also serving typical local cuisine. Thus, local people increasingly recognise that they can directly benefit from sustainable tourism development in the area.

Tourism is an important economic activity in the protected area but also increasingly recognised in the buffer zone. The main tourist attractions in the buffer zone include

the Mount Snežnik with its foothills, Vremščica and Brkini Hills, and a number of valuable natural sites, as well as cultural monuments, such as the Prem Castle. The well-preserved nature offers the possibility for active weekend tourism as well as sedentary tourism. There are several international cycling and walking trails crossing the area, including the Slovenian Mountain Trail, the E6 European Long Distance Trail, and the Via Alpina. Water mills used to be important along the Reka River but few have been restored for visitors. The area is also known for its countryside and local products, such as apples and plums, plum and juniper brandy, cheese, honey, vinegar and local dishes. There are a number of tourist farms offering typical local dishes and accommodation for visitors. Moreover, the Park enables the inhabitants and workers in the wider area to benefit from the numerous ecosystem services it provides. Being part of the Regional Park, local communities are more and more recognising their development opportunities.

#### **Conservation and Management Priorities for the Period 2014-2020**

The mission of the Park is to preserve the natural and cultural heritage of this internationally significant area in the Karst, and raise awareness of its values to achieve its conservation at the national level and worldwide.

The Slovenian Parliament adopted the first management plan for the period between 2006 and 2010. It was accomplished with an over 50% realisation of the planned activities. However, several plans are still being implemented in its latest "Programme for the Protection and Development of the Škocjan Caves Park", prepared for the period from 2013 to 2017 and adopted by the Slovenian Parliament in January 2014.

The management plan includes six long-term objectives and one cross-cutting objective. Each of them consists of several operational objectives and tasks which form the basis for yearly management plans. The principal aim of the document is to implement the legal requirements, both national and international (international conventions and programmes, namely the World Heritage and Ramsar Conventions, and the MAB Programme), to achieve the protection and sustainability in the Regional Park. The long-term objectives are aiming at:

- 1. conserving the Škocjan Caves and other caves in the PA
- 2. maintaining the favourable conditions of **natural values**, **animal and plant species** and **habitat types**
- 3. preserving cultural heritage and maintaining the cultural landscape
- 4. establishment of environmentally friendly Park visits and its promotion sustainable tourism

- 5. strengthening the involvement of local people in the Park activities
- 6. strengthening the Park's role in the **buffer zone** and **transition area**
- 7. continuous improvement, effective functioning and management of the Park, and **international cooperation**.

Living with the World Heritage as well as living on the World Heritage is increasingly becoming an important motto for conservation and development of the protected area and the buffer zone. Local people and municipalities are increasingly acknowledging the value of the international recognitions of Škocjan Caves. Local people and local economy can profit from the increasing number of tourists, but strategies and programmes including the whole destination area are still in need of development. Sustainable tourism can provide a long-term development and work opportunities for the region since local stakeholders need to play an active role.

However, the Park and caves capacity is setting a daily threshold of the number of tourists visiting the different parts of the cave system. Nevertheless, the area being rich in natural and cultural environment offers a number of additional natural and cultural wonders to make tourists prolong their stay.

Moreover there are also a number of direct or indirect pressures that the Park has to deal with. One of the main issues to be resolved in the coming period is the waste water treatment. The Park has been actively involved in this field, but it requires also an active and committed engagement of the municipalities and the State. Furthermore, the Park is surrounded by existing or planned infrastructure developments (highway, railroad and pipeline corridors, windmills, industrial zones, to mention just a few) which may generate a cumulative impact on the natural environment. Additionally, different views and diverse expectations can also create tensions especially when working with local people and municipalities. There are always issues that require cross-sectoral approaches while taking into account and respecting the status of the Regional Park.

In conclusion, it has to be emphasised that our natural and cultural values have an excellent reputation internationally and more and more people would like to visit the area. At the same time, this brings an immense responsibility to manage and safeguard the sensitive environment. The Park plays the leading role in the protection and sustainable use of resources, but the goals cannot be achieved without an active involvement of local communities and other stakeholders. Sustainable development is an excellent opportunity for the local economy, public and private sector equally; however, it is a long-term process involving different interest groups and requiring their active participation. Step by step, the Park has already brought considerable

positive changes in the area, and it is committed to continue following the present direction.



Šumeča jama with Cerkvenik Bridge Source: Škocjan Caves Regional Park Archive (Photo: Borut Lozej)



View of the Velika Dolina Source: Škocjan Caves Regional Park Archive (Photo: Borut Lozej)

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# THREE DECADES OF KOZJANSKO REGIONAL PARK Teo Hrvoje Oršanič, Barbara Ploštajner

**Abstract:** This paper intends to analyse the causes and consequences of significant changes in the development policies of the protected area Kozjansko Park over the 30-year period of its operation. It also makes a critical appraisal of the consequences of such changes and achievements thereof that have impacted upon the activities of the Park, as well as the wider Kozjansko region. The achievements of the Park include a number of good environmental park practices with a rich cultural life throughout the season, such as constant concern for natural values, monitoring of various types of flora and fauna, restoration of high-trunk meadow orchards, supporting organic food production, organisation of the Kozjansko Apple Festival, continuing educational activities for all age groups of visitors, and the introduction of a collective trademark Sožitje-Kozjanski park in Kozjansko Park, and the restoration of the medieval Podsreda castle.

**Keywords**: Kozjansko Regional Park, protected area, changes in direction of development, consequences, important achievements, cultural and natural heritage, monitoring, education, collective brand name

Kozjansko Regional Park, besides Triglav National Park, is one of the two oldest protected areas in Slovenia. During the existence of its operation several important and well-known results of conservation and protection have been achieved. Protective efforts have been carried out for the natural and cultural heritage with emphasis on the natural heritage in extremely bio-diverse biosphere areas of Kozjansko and Obsotelje.

# 1. Important Milestones and Direction in the Development of the Park

# The Image of Kozjansko through the 30-year Period

Decades earlier about 12,500 residents lived in three municipalities of Šmarje pri Jelšah, Krško and Brežice of the Kozjansko Park area. In Kozje, which is the largest town in the Park area, smaller, environmentally friendly, industrial plants flourished at that time such as MONT textile factory, glass plant Dekor and lumber processing plant Bohor employing a large part of the population. Other residents drove to work to nearby towns, and in the afternoons and other free time they cultivated small and medium-sized farms. Farming was largely undertaken in a sustainable way. Surplus crops were easy to sell representing a solid source of income to the locals. Primary schools were full; school classes were achieving a maximum number of students. In 1974 the area was affected by an earthquake, which largely destroyed the already decrepit buildings, the majority of which stemmed from the period prior to the World War I. The brick houses, which were built after the World War II on the burnt homesteads, survived better. With favourable post-earthquake loans, locals erected new houses that considerably changed the architectural look of the post-war Kozjansko cultural landscape. Road connections with the larger towns were poor; also the main regional roads were mostly macadam. There was a train connection from Celje to Croatia.

During that time the Socialist Republic of Slovenia decided to protect most of Kozjansko area (this geographical area is not precisely defined) in order to preserve the historical heritage in relation to the life and work of the late Marshal and President of the former Yugoslavia Josip Broz Tito and at the same time to preserve the identified biotic diversity and its abundant natural values. In 1981, as a consequence, the Memorial Park Trebče was founded.

In the early years of the Park operation, restoration work on the castle Podsreda commenced, and in the year 1983 an exhibition "Kozjansko in the National Liberation Struggle during WWII" was held in the castle. Six years later, in 1989, the areas of the southern part of the castle were restored; a permanent glass collection was also organised as a result of the traditional glazier's units prevailing in Kozjansko, the region being strongly characterised by this. Slovenia's independence in 1991 brought a new era also to the Memorial Park Trebče.

In the 1990s, the Park activity was strengthened by numerous research workshops which focused on ethnological and architectural themes. Music, exhibition events and publishing activities that were added on later increased the visibility and reputation of the Park on one hand, and of course influenced the landscape and life of the population in the Park on the other. The Park administration moved from Bistrica ob Sotli to Podsreda. In 1995 the Musical Summer at the Castle Podsreda with renowned domestic and world musicians started, later becoming an annual and highly acclaimed event of the Park. Partnerships were also established, the first being between the Wolfsegg castle of Bavaria and the Podsreda castle, then with the natural park Oberer Bayerischer Wald. The Bavarian-Slovenian Society was founded and in 1996 the house of the Slovenian-Bavarian friendship in Podsreda opened its doors after restoration.

In 1998, Kozjansko Park along with the Triglav National Park and Škocjan Caves Regional Park signed a partnership. The year 1999 marked a watershed in the development and status of Kozjansko Park. The new Nature Conservation Act redefined the name, status and operator of the protected area which became a

regional park named Kozjansko Park with the public institution "Kozjansko Park" as its manager. After this Act came into existence, the Park activity was stepped up in the matter of the nature protection.

The first nature trail – "Forest Nature Trail" – to the Podsreda castle was opened soon after. Kozjansko Park joined the national project "Revival of Meadow Orchards and Fruit Gardens of Slovenia", the monitoring of the inventory of birds of the Kozjansko Park was carried out simultaneously and public events were organised for the first time in the Park on the International Earth Day. Science and creative workshops are being organised regularly.

In 2000, a modest form of the Kozjansko Apple Festival was arranged for the first time and over the years it has grown into one of the most high-profile and high-quality events in the country. The staff and functions of the public park institution have been strengthened and expanded. The Park also started to implement more comprehensive and sophisticated nature conservation projects (LIFE, IPA, INTERREG, LEADER) as well as projects in the field of cultural heritage.

# The Current Kozjansko Image

About 10,500 residents live in five municipalities – Kozje, Bistrica ob Sotli, Podčetrtek, Krško and Brežice – of the Park area. Industrial plants have mostly failed and are being replaced by smaller private industry – primarily craft enterprises. Residents commute to work in nearby towns. In the field of agriculture there are two concurrent trends. On one hand, there is a growing abandonment of farming and the consequent overgrowth of agricultural land. On the other hand, larger farms are expanding by purchasing additional agricultural land whose owners are no longer able to cultivate because they are physically unfit, or such farming is uneconomical. It is easier for bigger farms to survive despite the slow marketability of the crops, even in small quantities. A few small and medium-sized farmers are entering organic farming because it is easier to sell their produce at a higher price. Elementary schools have far fewer children.

Extensive scientific research into the Park areas enrich the lists of the present species of flora and fauna, and underline the high level of biodiversity of Kozjansko Park among the most important nature conservation areas in Slovenia and Europe since 2004. The major part of the Park (two-thirds of the area) is one of the highly ecologically protected areas of Slovenia and is also part of the "Natura 2000" network. Since 2010, the wider area of Kozjansko and Obsotelje boasts the status of Biosphere Area MAB (Man and Biosphere) of the UNESCO World Heritage Site.

Mushroom monitoring has revealed the presence of almost forgotten species – rožnata vlažnica or pink waxcap (Hygrocybe calyptriformis) – in the Park area. A science workshop conducted in June 2011 has brought a new and important discovery - the presence of the insect hermit (beetle Osmoderma Eremita), which is, due to its being endangered, also among the species of European importance, this determining the status of the region as one of the Natura 2000 sites. The monitoring of butterflies carried out in June 2011 has revealed information about the presence of some species which still have no corresponding name in the Slovenian language.

Over 30 years of planning and management of protected areas have brought considerable results which the residents in the area and visitors enjoy. These activities include:

- over 70 km of groomed trails and general hiking trails
- nursery of organically grown old traditional fruit varieties
- publicly available filling line for fruit juice
- the possibility of professional maintenance of meadow orchards
- the Kozjansko Apple Festival as one of the most notable events in Kozjansko and the Festival of organic food
- through the Project Finance Facility LIFE preserved and maintained the exceptionally rich biodiversity of dry meadows at Vetrnik and Oslica
- the development of natural value sites (Gruška cave, karst spring Davjek, Bistrica Gorge, scaled outlier Žličar)
- the renovation and revival of the Podsreda castle through a range of cultural and natural scientific events
- the systematisation of Ema, Marija and other pilgrimage routes
- acquiring over 20,000 annual visitors, Kozjansko Park being an important tourist centre.

In the thirty years of its existence Kozjansko Park has evolved into a modern protected area identified by a unique harmony between nature and man, nature conservation and natural values, the richness of the cultural heritage, diverse events as well as a concrete realisation of a sustainable and balanced development.

#### Two Important Periods in the Operation of the Park

The thirty-year period of operation of the Park can be divided into two major periods. The initial period of operation was strongly associated with the care for the cultural heritage associated with the life and work of Josip Broz Tito and the integrated conservation of the cultural heritage within the boundaries of the Park; since 1999 and especially after the year 2004, a much stronger emphasis is placed on the conservation of the natural heritage of Kozjansko.

#### 2. Achievements and the Importance of Nature Conservation

#### Conservation of Biodiversity – The Case of High Dry Meadows

In the hilly areas of the Park (600-800m above the sea level) the continuous use of land has resulted in dry meadows where an exceptional diversity of grassland species is found including some rare species. The meadows also have many hidden surprises, as for instance the recent discovery of a small mushroom belonging to the rožnata vlažnica or pink waxcap (Hygrocybe calyptriformis) species which was considered as extinct (rožnata vlažnica). Through the LIFE project much was done to educate meadows' owners and the general public as well as to protect the dry grasslands. A visit to the dry grasslands nowadays is considered an integral part of youth education.

#### The Way Forward

The task of the protected area management is in the collection of data and the promotion of knowledge and research into the Park area. However, knowing only the number of species per unit in the area does not guarantee a successful species conservation. Among the priorities of the manager of the protected area is precisely the communication of the importance of linkages and interdependencies existing in the Park to the public. By such means, the public will fully learn the role, responsibility and functions of the Park and they can choose to be critical to its development plans. For the purpose of getting to know this kind of interspecific and intra-specific connections, a quality information and learning centre is needed.

#### Monitoring of Natural Assets – The Case of Bird Inventory

One of the basic but unfortunately underperformed tasks of the institution of the protected areas is the monitoring of the populations of protected species or habitats.

In cooperation with the Association for the Observation and Study of Birds of Slovenia (DOPPS), we carried out two systematic inventories of ornithofauna at an interval of ten years. The results of the last census indicate negative trends in the population dynamics of forest bird species and slightly less negative trends in the dynamics of grassland bird species. The result is certainly worrisome, while the interpretation of such results does not necessarily mean that living conditions for these species significantly deteriorated precisely within the protected areas. Such a trend is most likely visible in the population dynamics of the observed species in the wider area of Europe, hence also in the Slovenian protected areas.

### The Way Forward

Monitoring will certainly gain in importance in the future, as the results of these observations (while ensuring the acceptability of the collected statistical data) best reflect the performance of broader and narrower communities in the conservation of nature. However, only mere dry data of the disclosed trends in the population dynamics of different present species of birds are not sufficient. Each result of the monitoring activities requires an upgrade in terms of guidelines to improve the situation which the manager of the protected area must enforce in all procedures including in the adoption of spatial development plans in the area.

# 3. The Achievements and Importance of Landscape Conservation

# Landscaping – The Case of High-trunk Meadow Orchards as Typical Kozjansko Landscape and of Coexistence of Nature and Landscape Use

Kozjansko landscape can be divided into fragmented, populated landscape and relatively concise and sparsely populated forest areas. Specialties of Kozjansko landscape are certainly common high-trunk meadow orchards and fruit gardens. Kozjansko landscape, with its fragmented population, is environmentally insensitive because it is spatially and energy-wise irrational, while on the contrary, the high-trunk meadow orchards represent the most environmentally acceptable fruit production areas. These are orchards where old varieties of fruit trees are grown and for their survival they need only basic care (cut). Meadow orchards are a perfect example of environmentally friendly, sustainable and natural use of the landscape. Kozjansko apple has become synonymous with the Kozjansko landscape. Increasingly popular Kozjansko apple juice is produced out of the apple production. Recognising that it is produced and offered without any modern additives, emulsifiers and preservatives, it is becoming an increasingly sought for Kozjansko product.

### The Way Forward

In any case, the goal of every protected area is the promotion of environmentallyfriendly use of the landscape. An example of orchard with old varieties of apples and apple juice is one of the best examples of the co-existence of land use and protection regimes. The Park definitely supports and develops similar co-existing models (Kozjansko Apple Festival, promotion of products made of wood, clay, beekeeping, herbalism, organic farming, etc.).

It is also necessary to develop more environmentally sound practices such as organic farming and other crops in the spirit of care of land use and landscape. In architectural terms, the aim is to preserve the traditional architecture and civil engineering heritage with a modern upgrade.

One of the most difficult problems in the care of the landscape in the protected area is definitely a lack of adequate regulatory tools when deciding on interventions in the environment. The cooperation of managers of protected areas in the issuance of such approvals is only advisory, and thus not in accordance with the stewardship role of the protected areas.

# 4. The Achievements and Importance of Preserving the Cultural Heritage in the Park

#### The Restoration of the Architectural Heritage – The Case of Podsreda Castle

In the year 1983 the then administration of the Memorial Park Trebče decided to restore the Podsreda castle. Works on the restoration of the castle strongly affected the public image of the Park. The castle is owned by the municipality of Kozje, while Kozjansko Park is the contractual operator of the castle. Along with the progress of the renewal, the contents were always considered to be assets that would ensure visits to the castle and provide it with liveliness. Since glassmaking was important in the history of Kozjansko, the original idea of the revival of this tradition in the castle area was completely logical. The castle remains the most important cultural centre of Kozjansko and Posavje with its quality-furnished showrooms. As there are more exhibition spaces, there are also more events held at the castle.

The castle is also a place of other forms of artistic expression – from theatre to music. Especially the latter strongly characterises the heartbeat of the castle during summertime. The castle also serves as a place of business meetings and as a popular place for marriages.

Through centuries of history (its first mention dates back to 1213) the castle has kept its basic elements and is often referred to as "the most castle-like Castle of Slovenian castles". Funds for its maintenance and basic renovation work are drawn solely from the entrance fee.

# The Way Forward

The basic orientation of regional parks is not dealing with cultural heritage, but with the natural one. At the moment, Kozjansko Park with the Podsreda castle forms a successful, well-established and thus indivisible whole. In the selection of exhibitors and themes of exhibited works the authors whose inspiration for their creation is nature are given priority.

In the Park, the emphasis is on the preservation of the intangible cultural heritage, through a series of workshops to preserve cultural traditions, for example glassware, manufacturing bundles, etc. Also maintained is the part of the intangible heritage which is based on various legends like Guzaj the Robber and Podsreda Viza, or in the language tradition the promotion of the book "Lučka sredi jive sveti" (Light is lit in the middle of a field) written in the local dialect.

The common denominator of problems in dealing with cultural heritage in protected areas is the lack of financial support for culture from the competent ministry.

# 5. Projects and Tenders

The Park has been constantly monitoring various options to raise funds for the preservation and restoration of cultural heritage; in recent years it has been expressly exploring ways to raise funds for the conservation of natural heritage. There have been some high-profile international projects in the Park which have had a significant impact on the space (the LIFE project "Dry Meadows on Vetrnik", the IPA project "From Wryneck to Juice", etc.).

The benefits of participating in tenders for projects are mainly the following:

- new acquisitions of space, and
- new jobs or preservation of the existing ones.

The disadvantages of participating in tenders are mainly the following:

- uncertain and difficult provision of own funds
- pronounced delays of payments for project tasks performed, and
- often unreasonable restrictions on the use of the acquired assets.

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## The Way Forward

In any case, the participation in various competitions is beneficial for the overall development, as it brings a lot of new values to the place, thereby enriching it. However, the question of participation in complex and large-scale projects remains open because of the lack of finances. There is also a larger issue as to what would happen in the event that in the case of some complex project, due to objective reasons, we would not be able to meet project tasks. Who would bear the financial burden?

It makes sense that the responsible ministry provides funding to public institutions for their participation in international projects, as it is in the broader societal interest to attract international funds to our country and considering that Slovenia does not reach the desired level of international funding use.

### 6. Educating the Public

All actors in nature conservation are responsible for the development of the nature conservation profession. The largest share of specific educational activities in this respect is carried out in protected areas. It is important that the processes of education cover all age groups of park visitors and beyond.

#### The Way Forward

Given the fact that after the completion of such education entropy with regard to the obtained information is reached, the most important is the students' positive impression of the content of the education and about the institution carrying out such activity.

One of the priority tasks of the institution managing protected areas are information centres. Kozjansko Park does not have this kind of centre and the acquisition of such a unit is one of the future priority tasks.

# 7. International Cooperation

The beginnings of Kozjansko Park's international cooperation date back to 1989 when a partnership agreement on cooperation was signed in Wolfsegg near Regensburg, Germany. The cooperation continued to expand with the establishment of the Bavarian-Slovenian Society in 1995 which led to cultural exchange and subsequently also professional cooperation in the field of architecture with the College of Architecture in Regensburg (the result of cooperation is that most of the architectural heritage in the Park is recorded).

Partnerships with similar institutions abroad, such as the Natural Park of Upper Bavarian Forest, Südsteirisches Weinland and national park Thayatal, strengthen the technical cooperation in various fields of nature conservation and sustainable development.

We work closely with the immediate neighbours in Croatia with:

- the museums of the Croatian Zagorje (especially Kumrovec Old Village) for organising exhibitions
- the Public Foundation for Management of Protected Natural Values of Krapina-Zagorje County in the field of nature conservation
- the Park Nature Žumberak-Samoborsko gorje and Risnjak National Park for the conservation of high-trunk meadow orchards, and
- with various tourist communities for establishing routes.

Within the framework of various projects and support programmes (Cadses PANet 2010, Ema Pilgrimage Route, Marija Pilgrimage Route, Pilgrimage Europe, Bio-EU Parks, Regio, etc.) we are associated with very different institutions and organisations active in the field of nature conservation, tourism, research and sustainable development.

# The Way Forward

The international partnership and cooperation hitherto established will be maintained and upgraded both in terms of exchange of professional experience and in the framework of project work. The network of partners at home and abroad is expanding since their participation in the new project proposals always brings new partnerships. In the future we will strive for a greater integration in the context of the status of the biosphere area (in the context of UNESCO's MAB Programme – Man and Biosphere), both in the area of technical cooperation and the cooperation between the inhabitants of individual biosphere areas.

# 8. Discussion

Each protected area has a distinctive feature which makes it visible in such a space. Kozjansko Park has several such distinctive features, both in the field of natural as well as cultural heritage. Recognition or acceptance of the protected areas by the public and by the inhabitants of the Park does not occur immediately, nor is it easily achieved. It is a puzzle of specifics in the area and the degree of acceptability of park regimes. The acceptance of the park regimes is directly related to the clarity

and visibility of the park definitions and usefulness of the park activities to the local population. The management of protected areas is about intensive communication both with individuals and with different organisations and communities, which must be timely, preferably before initiating the procedures for obtaining the appropriate licenses for the protected area operation.

In the protected area we constantly encounter processes based on the developmental interests of individuals, local communities or organisations and lead to certain negative effects, such as:

- the licensing of agricultural land to housing, tourist facilities, infrastructure, etc., and the resulting deforestation as a substitute for surfaces
- the expansion of settlements and dispersed building, a large proportion of holiday homes and vineyard cottages, and
- large-scale construction that does not follow the criteria of the landscape or architectural characteristics of the area.

In civil construction, wood is underutilised and there is an insufficient consideration of the principle of energy conservation, for instance:

- the relatively weak role of institutions in guiding the harmonious and sustainable spatial development
- the optional opinion of the Park in relation to changes in land use
- the intensification of arable land cultivation in the lowlands of the park and the abandonment of arable land cultivation in the higher elevations
- the excessive logging of mature forests, and in no way reflecting the presence of the protected area in the forest management plans
- the lack of plans for water management, inadequate logging of the riparian vegetation
- · the frequent and unnecessary light pollution of the landscape
- extensive quarrying, and
- the emergence of invasive alien species, etc.

The management of the protected areas, as it is incumbent on national park institutions by the existing provisions, has not been fully stipulated by the law, for example there is no proper legal basis for the cooperation on spatial planning. We also miss swift, clear definitions and decisions in connection with the plans that are to be materialised in the protected areas. As an example, we can use solar power plants which is the current trend in energy production. It is a renewable energy source that at first glance is an agreeable energy solution. Problems arise with a possible major "sowing" of the area with private small solar power plants that would not fully contribute detectable amounts of energy in the total balance, but would have highly negative consequences for the appearance of the landscape. Roof solar power plants for production of electricity are more acceptable from the landscape point of view, while larger solar power plants are not. A large solar power role in the Park would be preferable. With regard to these decisions we - the managers of protected areas - are left to our discretion.

It is also significant that any major change in the management of the protected area policies may have consequences which are difficult to deal with and are a burden to the manager of the protected area. The initial focus of the protected area in the protection and care of the cultural heritage in particular resulted in relatively frequent purchases of important real estate - buildings important for the cultural heritage. Unfortunately today, due to a lack of suitable facilities for the resuscitation of these buildings, lack of funds for their restoration and maintenance and due to the Park's shifting its focus towards the enforcement of nature protection regimes, they present a huge burden on the Park. An important and open question remains – what and how to handle the real estate issues? Unfortunately, the question of real estate possession itself brings costs and responsibilities. The sale of such properties is exceptionally difficult and slow due to various regulatory limitations.

Protected areas can certainly serve as a kind of "testing ground" for the testing and introduction of new environmentally friendly technologies. A novel and unique environmental solution is the possible introduction of constructed wetlands, which operate according to the principles of ecoremediation (ERM) imitating natural processes of self-cleaning waste water. Dispersed settlements in the Park make it very difficult to clean the waste water from individual households. Constructed wetlands are a simple, affordable, effective and coincide with the principles of nature protection. The number of constructed wetlands in the area is increasing; we believe that it is also due to the existence of samples of constructed wetlands within the Park administration viewed by a large number of visitors.

Kozjansko apple has become a symbol of nature protection, preservation of heritage and tradition, health and a symbol of recognition of the protected area Kozjansko Regional Park. The apple connects the manager of the protected area and local people, nature, culture and economy, tradition and modernity. With the introduction of the honorary title of the "crown of the year" ("carjevič leta"), an annual award is given to the most dedicated owner of meadow orchards. This is a promotional campaign which aims to encourage the owners of meadow orchards. The campaign was well received and serves its function. It was created as an upgrade of the cooperation in three major projects: the national one on "Reviving Meadow Orchards and Fruit Gardens of Slovenia" and two international ones, Interreg IIIA "High-trunk Meadow

Orchards as a Component of Biodiversity and Aesthetic Value of the Landscape" and the IPA "From Wryneck to Juice" which gave excellent results in preserving and maintaining high-trunk meadow orchards. The award is an integral part of the events during the Kozjansko Apple Festival. Accelerating the high-trunk meadow orchards as a good park practice also offers the manager of the park a few options for additional income. It could be said that in Kozjansko apples are more than just fruit.

In contrast to the cultural heritage, which is primarily concerned with restoration and maintenance, the natural heritage mainly deals with conservation. Natural processes or ecosystems are difficult to renew and even more difficult to reconstruct into their original state because they are hard to determine at the time of the designation of the protected area. New findings, resulting from greater emphasis on the recognition and protection of the natural heritage in the park, require constant adjustments – including the boundaries of the park. Integration of the country in the European Union resulted in the adoption of a European nature protection legislation based on the Natura 2000 network of sites. It is reasonable to adjust the boundaries of the protected areas to the density of Natura 2000 sites and natural values. This is also one of the priorities of the Kozjansko Park.

The future development of the park is seen in the establishment of nature protection supervision in accordance with the provisions of the Nature Conservation Act of 1999. In doing so, we emphasise that nature protection field inspectors should be seen primarily as consultants, communicators of nature and educators of the public and less as a supervisory body which can impose on-the-spot cautionary fines for violations. This is among the issues that are not regulated in a satisfactory manner by the currently valid legislation.

The terms of regulations in relation to Natura 2000 areas impose the implementation of regular monitoring of important European species or habitats and regular reporting to the European Commission. Monitoring is currently not implemented with complete integrity; it also means a relatively high cost because of the timing and the technical complexities. Nevertheless, the fact is that only statistically evaluated monitoring data is the sole true assessment of the effectiveness of nature conservation or enforcement of park nature conservation principles; we note that there are neither the criteria for evaluating the quality of management of protected areas, nor a list of required research.

Similarly, as it has been introduced by a new law on Triglav National Park, it makes sense also in Kozjansko Park to introduce a new form of public participation - a forum of the interested public of Kozjansko Park. In the local development concepts the park baseline is satisfactorily taken into account.



Kozjansko Park - Kozjansko landscape Source: Kozjansko Park Archive

# 9. Conclusion

Upon the transition to a post-industrial, post-modern society, the protected areas have a huge responsibility in the transition of society to a more eco-centric society. The transition is not and will not be fast because the paradigm of human exceptionalism, which is based on extremely anthropocentric foundations, is still deeply rooted in the society dominated by satisfying only human interests and thus "closing the eyes" to the environmental considerations and consequences.

Kozjansko Park, established in 1981, passed through two phases of development in its thirty-year history - from the emphasis on taking care of the cultural heritage, to the transition to intensive protection of natural features and landscapes. The change of direction has left some burdens that the institution of the Park itself can hardly solve.

After three decades, we can safely say that we, in Kozjansko Park, have developed and continue to move forward with some good park practices. Additionally, we have successfully removed the known stereotype fears of the local population within the protected areas with regard to the developmental restrictions. As shown by some sociological researches the population is now satisfied with their life in the Park.

The future of the protected area is bright as a new updated instrument of incorporation is in preparation, which in fact may change the boundaries of the protected area in a way that most of the Natura 2000 sites will be within the Park's boundaries. With this, the work on the conservation of natural values of Kozjansko will be much easier and more comprehensive, and also we will be closer to the European average volume of protected areas, which is quite a few percent higher than ours (12.6%), thereby enabling a number of new jobs.

Kozjansko Park, as an area which is renowned as one of the proverbial undeveloped areas, has a good potential given its extraordinary biodiversity, preserved landscape and the production of healthy food. Through its activities, Kozjansko Park successfully demonstrates a paradoxical relativity criteria of development. That which is to some undeveloped landscape, to others it is a healthy and pristine environment with plenty of opportunities for the production of healthy food. This is an opportunity to build a better world together.

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# PARK STRUNJAN – CASES AND CONTROVERSIES Marko Starman

**Abstract**: Strunjan is a seaside settlement on the Slovenian coast between Izola and Piran. It is situated along the bay and embraces the valley and the slopes of the hill which on the north side eventually steeply graduate towards the sea ending at a high flysch cliff. The landscape and natural Park Strunjan (LPS) is an area enjoying long-term high-quality interaction of men and nature, with a high ecological biodiversity and landscape value. The area is protected since 1990. The Public Institute LPS has been the managing authority of the protected area since 2009. According to the IUCN classification, Strunjan can be defined as a IV and V category protected area.

From the beginning of its existence, LPS has been involved in many legal disputes and controversies as a protected area. In this article an attempt has been made to present some of the legal issues involved in the process of managing a complex protected area. The analysis shows that significant duties are entrusted to the statecontrolled managing authority, but on the other hand real executive powers are missing from such an agency. The larger picture shows there is a problem of weak institutions and at the same time it also reflects a significant gap between the law as it is legislated in the books and the law in action in reality. Some tentative general conclusions are arrived at in the light of the case law and legal experience.

**Keywords**: coastal zone, management of protected area, rights of landowners, conflict of competencies, case law, institutional cooperation, urbanisation

Strunjan is a seaside settlement on the Slovenian coast between Izola and Piran. It is situated in the Strunjan bay, in the Strunjan valley and on the sunny slopes of the hill Ronek (116m) which on the north steeply drops to the sea and ends with a high flysch cliff. It consists of the small villages of Karbonar, Marčana, Pretski grič, Ronek and St. Spirit. The Strunjan Peninsula is a great pearl of natural heritage on the Slovenian coast. The climate in the park is Sub-Mediterranean which is characterised by hot summers and mild winters. Different flora and fauna have adapted to this climate. Strunjan salt pans represent a significant living environment wherein different plant and animal species have adapted to a high level of salinity. Between the sea and land we can find different areas with fresh, brackish, sea salt and even water saturated with salt. The landscape and natural Park Strunjan (Park Strunjan) is an area having a long-term high-quality interaction between humans and nature, with a high ecological biodiversity and landscape value. Park Strunjan covers the whole part of the Strunjan Peninsula, protected as a natural and cultural heritage area at the municipal level since 1990 and at the state level since 2004.

The Regulation on Landscape Park Strunjan, adopted on the 1<sup>st</sup> of October 2004<sup>1</sup>, defines the protected area and its most important parts which are regulated as natural reserves. Nature reserve Strunjan covers the area of the cliffs and marine protected area. Nature reserve Strunjan – Stjuža covers the saltpans and the Stjuža lagoon. The two nature reserves constitute the core of the protected area and are biologically the most important part of the park.

The rest of the area is protected as a landscape and a seascape, where the cultural and natural heritage coexist and hang onto each other. The park is originally a rural settlement which has become urban in nature. Just a slight part of the park population lives of agriculture and fishery. Urbanisation can be seen everywhere in the adaptations and reconstructions of the farm houses into new holiday houses that changed the landscape scenery severely in the last half a century.

## Legal Framework

In 2009 the Slovenian government established an institution in order to protect the natural values and to preserve biodiversity and landscape diversity. For the Strunjan peninsular area a specific governmental regulation was adopted which regulates the legal status and organisational issues related to its operations.

The legal form of the public institution established and chartered by the governmental decree is general in nature. The same legal framework is used for the performance of most public service duties at the national and local level, from hospitals to schools, museums and forestry services, etc. There are just a few organisational rules which are specific for public institutes in charge of nature protection, especially natural parks. One is mandatory representation of local communities in the supervisory board and the other is the nomination of the director directly by the government.

The Public Institute Park Strunjan performs protection, technical control and management tasks. The duties are enumerated<sup>2</sup> as a part of the public service

- 1. prepare a draft of the management plan for the Landscape Park
- 2. prepare the work programmes of the Landscape Park pursuant to the management plan and carry out or ensure the implementation of individual nature-conservation tasks and measures
- 3. co-operate with local communities within the Park in the achievement of Landscape Park objectives
- 4. monitor and analyse natural resources, biodiversity, landscape variety and the environment in the Landscape Park
- 5. ensure the implementation of development and protection directives and protection regimes
- 6. work with an expert organisation in the preparation of nature protection guidelines, nature protection

<sup>&</sup>lt;sup>1</sup>Official Gazette of the Republic of Slovenia no. 107/04 as amended by no. 114/04, no. 83/06, no. 96/06, no. 76/10.

<sup>&</sup>lt;sup>2</sup> (1) Within the public service duties of Landscape Park management, the Public Institute shall perform the following tasks:

performed in the public interest. If the legal structure is analysed, the duties of the Institute boil down to two main categories which are firstly *"to cooperate with"*:

- local communities to further the objectives of the protected area and in the preparation of programmes, plans and other development and protection documents
- managing authorities and organisations in charge of protection of the area and use of natural goods and engage itself in the preparation of programmes, plans and other development and protection-related documents
- · land owners, tenants and other users of land and NGOs; inspectors; and

secondly "implement or ensure the implementation of":

- · development and protection guidelines and protection regimes
- nature-protection measures and tasks.

opinions and other opinions, conditions, consents and expert materials for works referring to the Landscape Park

- 7. implement nature-protection measures in the Landscape Park, alongside measures of contractual protection and care in accordance with the provisions governing nature conservation
- 8. implement nature-protection tasks or ensure their implementation
- co-operate with management authorities and organisations implementing the tasks of protection, management or use of natural goods in legally determined areas, or implementing public service in these areas
- 10. work with inspection services
- 11. work with NGOs
- 12. co-operate with owners, tenants and other users of land in the Landscape Park, and provide technical assistance and advice
- 13. co-operate in the preparation of programmes, plans and other development and protection documents in the part referring to the Landscape Park
- 14. co-ordinate and monitor research and development tasks in relation to the Landscape Park
- 15. participate in the implementation of international projects referring to the Landscape Park, or implement these projects
- 16. oversee the presentation of the Landscape Park and provide awareness-raising and education activities on the Landscape Park for the public
- 17. ensure access to information on the Landscape Park and manage the information network of the Landscape Park
- 18. plan, construct and maintain the park infrastructure
- 19. provide a guide service to the Landscape Park visitors
- 20. manage real estate in the Landscape Park formerly owned by the state and transferred to the Landscape Park for management
- 21. implement other tasks in the framework of protection and development of the Landscape Park in accordance with the Decree.
- (2) Subject to its establisher's consent, the Institute may also perform other tasks.

The competence to perform the stipulated core duties of the Public Institute, as the managing authority (the Institute), depends upon the cooperation it receives from the various institutions. The structure of cooperation is not defined by law or an established practice; there are no mutual rights and duties. The Institute cannot demand any action by other national or local level institutions. Its executive powers are limited to the supervising of violations of protection regimes. It can advise, it can suggest, it can subsidise, it can help, it can criticise and even formally complain to proper authorities, but it cannot request. On the other hand, there is the obligation to implement and ensure the implementation of the protective regime.

There is a legal instrument available to the Institute that can (mostly indirectly) demand positive action from other institutions. That is the protected area management plan. The management plan for the protected area is a regulation adopted by the government at the proposal of the Institute that defines the directives, objectives and tasks of other institutions with regard to the protected area. The duties of other institutions cannot be enforced directly, but only indirectly through their plans, programmes and policies or within the impact assessment procedures at the strategic or project level.

There are some significant limitations<sup>3</sup> to the impact of the management plan as well. It cannot demand action of the local government due to the constitutional principle of decentralisation and separation of powers. The national government can bestow duties on the local ones and individual persons only by a statutory law, not by a regulation. Furthermore, regulations cannot entrust additional powers to the Institute. Any administrative jurisdiction has to be entrusted by statute. The original "tension" between the duties to deliver results and bear responsibility on one hand and the dependence on the good will of functional and territorial institutions on the other is not significantly overcome even after the adoption of the management plan<sup>4</sup>.

When there is "tension" between the spirit and letter of the law, the development of legal institutions can happen only through administrative and judicial practice.

<sup>&</sup>lt;sup>3</sup> One of the crucial limitations is financing which is a complex issue that is not analysed in this article.

<sup>&</sup>lt;sup>4</sup> As a matter of function, the management plan is important for the predictability and prioritisation of activities and its transparency for the stakeholders in the protected area. Dr. Janez Potočnik in the article "Sustainable development through integrated management of protected areas – The EU experience of the Natura 2000 network" stresses the importance of management planning, even though not a required tool under the directive as a key tool to achieve the integration into sectoral planning, to identify the resources, and ensure transparency. Not directly, but Potočnik introduces the policy of the Commission to integrate the funding of the LIFE Program with other domestic and EU funds. Such a policy sounds very good because integrated investment in protected areas and Natura 2000 network can produce a spillover positive effect by inducing sustainable development. On the other hand, experience shows that project financing limited to big and complex projects has got high administrative costs, calls for centralisation and promotion of monopolies, cartelisation and waste of resources.

In the following part of this article two such areas where the administrative and judicial practice has shed some light on the role of public institutes as management authorities are outlined. One is the Natura 2000 Network management and the other one is the zoning and building regulation and practice.

#### Managing Natura 2000 Network within the Park

The aim of the Natura 2000 network is to protect Europe's most important ecological sites. Protected and managed by Member States, Natura 2000 sites minimise biodiversity loss and environmental deterioration. All Member States must, according to the Habitats Directive<sup>5</sup>, ensure that the listed habitats and species of

<sup>&</sup>lt;sup>5</sup> The objective of the Directive 92/43/EEC is to contribute to providing for biodiversity by preservation of natural habitats and wild plant and animal species, listed in Annex I and II (Article 2). Setting up of a harmonised European environmental network called "Natura 2000" makes a significant contribution to that objective. The network allows for preservation and rehabilitation of natural habitats and wild plant and animal species in the EU Member States. With the aim of setting up a harmonised European environmental network of special conservation areas in a given schedule, the first paragraph of Article 4 of the Directive 92/43/EEC stipulated to Member States to use the criteria specified in Annex III to the Directive and appropriate scientific information to propose a list of sites indicating which natural habitat types in Annex I and which species in Annex II that are native to its territory the sites host. The national list should include areas with priority natural habitat types and priority species, which the Member States selected on the basis of criteria from Annex III. "Priority" are those species and natural habitat types, which are in danger of extinction and for the preservation of which the EU bears special responsibility given the share of their prevalence in the European territory of Member States. A full list is transmitted to the Commission, within three years of the notification of the Directive, together with information on each site. The deadline for the Republic of Slovenia was the date of accession to the EU. As stated, the obligation under the first paragraph of Article 4 of the Directive 92/43/EEC stipulated to Member States to use the criteria specified in Annex III to the Directive and appropriate scientific information to propose a list of sites indicating which natural habitat types in Annex I and which species in Annex II that are native to its territory the sites host. The duty to prepare a full list which must be devised exclusively for the purpose of preservation of natural habitats and wild plant and animal species, listed in Annex I and II (judgment in the case C-317/98 First Corporate Shipping, Receuil, RC. 2000, p. 1-9325, Item 20) stems directly from the first paragraph of Article 4. Based on the submitted list, the European Commission initiates the second stage. As regards the second stage of the procedure, the second paragraph of Article 4 of the Habitats Directive specifies that the Commission shall establish, in agreement with each Member State, a draft list of sites of Community importance based on criteria from Annex III (second stage). The assessment criteria for the second stage are - as the criteria for the first stage - specified exclusively in relation with the objective of preserving natural habitats or wild plant and animal species from Annex I and II. The only exception envisaged by the Directive is that Member States with areas with one or more priority natural habitat types and priority species comprising more than 5% of the national territory may, in agreement with the Commission, request that the criteria from Annex III (second stage) be used more flexibly in the selection of all SCI in their territory (the second subparagraph of the second paragraph of Article 4, see also the Opinion of the Advocate-General Sharpstone of 9 July 2009 in the case C-226/08 Stadt Papenburg v. the Federal Republic of Germany, RC 2010). Later the European Commission in the procedure involving an ad hoc committee selects the list of selected areas as sites of Community importance.

European interest achieve a "favourable conservation status" by undertaking certain measures to meet conservation objectives of habitats and species. The directive lays down the general commitment of EU member states for monitoring, evaluating and reporting on the conservation status of the species and habitats important for the EU. To achieve the "favourable conservation status" level, local objectives must combine with those at the national level so that they meet the requirements for favourable conservation status at all levels.

Since 2007, Member States have been required to set up a monitoring scheme, according to Art.11 of the Habitats Directive, to evaluate and report any changes in the conservation status of habitats and species, every six years<sup>6</sup>.

The main ex-ante instrument of the Natura 2000 network is the strict<sup>7</sup> impact assessment requirement for any programme, plan or project having an effect on the area. Impact assessment, monitoring and inspection of protection regimes are expost tools. Investments are proactive ones.

The distribution of responsibilities is generally such that investments in the protection of Natura 2000 sites in the park are exclusively in the domain of the managing authority. Investment means also inspection of protection regimes under the Decree on landscape and natural parks<sup>8</sup>. Therefore the Institute is in charge of

<sup>&</sup>lt;sup>6</sup> The directive defines only the legal and administrative requirements as to the monitoring of the status, and not the actual practical instructions for its implementation itself. Reporting within the Habitat Directive framework is composed of several parts. Article 11 stipulates that the member states are liable to monitor the conservation status of natural habitats and species from Article 2, where special attention is to be dedicated to the priority natural habitat types and priority species. This stipulation concerns all habitats (from Annex II) and species (from Annexes II, IV and V) and is not limited only to the Natura 2000 areas, but imposes data to be gathered outside the network as well. Article 17 stipulates that the member states are liable to prepare, every sixth year, a report on the implementation of the Habitat Directive's measures. The report is to include above all information on the conservation status of natural habitat types from Annex I and species from Annex I and species from Annex I and species from Annex I. As well as the main results of status monitoring from Article 11.

<sup>&</sup>lt;sup>7</sup> *The Directive 92/43/EEC* requires for plans and projects in the area of Natura 2000 a strict prohibition of adverse impacts which requires an assessment of all types of impacts. The Court, in the case *C-503/04 Commission of the European Communities v. the Federal Republic of Germany (RC 2006: I-53)*, extended the obligation to projects affecting an area of Natura 2000 although carried out outside it. In the same case, the EU Court took a position on protection of species and required the prohibition of use of phytosanitary agents if that would endanger species from the list.

 $<sup>^8</sup>$  For Natura 2000 sites in protected areas (such as the park Strunjan) the Natura 2000 management plan 2007 – 2013 (no. 35600- 3/2007/7) from 11 October 2007 states that the management plan of the protected area, will when adopted define the detailed protection regimes for Natura 2000 management. In the same document for the sites in the Park Strunjan there are some specific activities to be included in the management plan which are: performance of active protection regimes inspections, especially during summer season; defining and enforcement of quiet zones between 1 March and 30 September; clear limitation of the area of saltpans and the beach; preservation of the existing paths, and the functioning of the saltpans within the existing area.

all the investments in the protection of Natura 2000 sites in the park. In short, the Institute is responsible for Natura 2000 sites.

The role of the Institute in the impact assessment procedure has been minor. The expert part of the assessment is performed by the Institute of the Republic of Slovenia for Nature Conservation (IRSNC) and the legal one by the Slovenian Environment Agency (SEA). When the IRSNC is doing the assessment, it is supposed to consult the Institute. Such consultation is neither formalised, nor binding, in the law.

The case law has gone to a different direction altogether. In an administrative court case from 2010<sup>9</sup> the Institute of the Triglav National Park did not agree with the assessment of IRSNC and the legal conclusions of SEA and objected in court. The court granted independent standing to the Institute and agreed with the Institute interpretation of the protection regimes that differed from the IRSNC. The court decided that the management authority of the park had equal footing as the IRSNC under the law in the impact assessment procedure for the area of the park.

Once the assessment is made, the conditions are defined, and the formal decision of the SEA is adopted, the role of the Institute in controlling the fulfilment of those conditions can become very important.

In the case<sup>10</sup> of impact assessment of Natura 2000 site in the Strunjan Park saltpans, the IRSNC set the conditions to the municipality to be followed before the actual works on the ground can be performed. In its decision IRSNC requested the municipality to agree with the Institute the way mitigation<sup>11</sup> activities are to be done. It follows from the decision that a formalised agreement between the Institute and the municipality on the mitigation is requested. Consequently the consent of the Institute is a formal condition. As a matter of principle such a distribution of roles is consistent with the duty of the Institute as a managing authority to invest in the protection of the area including the Natura 2000 sites and the role of IRSNC to set up conditions in the light of the overall national situation<sup>12</sup>.

<sup>&</sup>lt;sup>9</sup> In the case (U 1415/2008, dated 18 March 2010), the controversy was about a building permit for apartments in the central part of the national park. The IRSNC in its assessment agreed that it was only reconstruction of an existing building. The Institute of Triglav National Park assessed that new buildings are prohibited according to the protection regimes.

<sup>&</sup>lt;sup>10</sup> The municipality of Piran is planning to build a reservoir in a form of a basin in the small part of the saltplans of Strunjan for the flood protection of the settlement of Strunjan.

<sup>&</sup>lt;sup>11</sup> The mitigation consists of improving the conditions of other areas of the saltpans such as dikes to enable the transplanting the protected halophytes (Salicornia and Sarcocornetea fruticosi) to maintain the existing good condition.

<sup>&</sup>lt;sup>12</sup> In this article I do not analyse the problem of the concurring duty between the managing authority – the institutes and the IRSNC in the area of monitoring the Natura 2000 sites.

The foregoing case of cooperation between the Institute and IRSNC in the case of impact assessment of Natura 2000 shows a mechanism of mutual responsibility that can work in practice because it is preventive. The role of the Institute can be crucial in sanctioning the breaches ex post facto. In the following part a controversy about building permits in the Strunjan park is analysed.

## Landscape Protection within the Park

The zoning regulation of the park area is adopted by the municipalities. Even though the law enables the government to adopt special territorial plans for protected areas, such central powers have not<sup>13</sup> (for political and practical reasons) been exercised so far. The territorial planning of natural – landscape and seascape park areas is part of the regular planning process of the local government. Zone-regulating is part of the independent powers of the local authorities.

Within the park, however this power is limited by the rules and regulations constituting the protected area and the managing plan. Ideally all these regulations should be included in the territorial plans as soon they are adopted. In practice, the process of incorporation of the landscape and nature protection rules in the territorial plans seldom happen, and not at all promptly.

The local authority is in charge of territorial planning, but the state administration is the one to licence the building permits. When legislation or in this case zoning regulation is not clear, clarification comes from case law.

In the Strunjan park a controversy about a building permit arose soon after the Institute was established. The building permit was already in force and the private developer was in the process of starting the construction of three multi-apartment buildings in the central area of the park. Following the protests of the local population, the Institute issued a petition for reversing the building permit by the Ministry of Environment and Spatial Planning (the Ministry) as part of the extraordinary supervision of administrative action.

The Ministry<sup>14</sup> agreed with the Institute that the building permit was licensed without taking into account the limitations of the landscape protection regimes, which were not even mentioned in the permit. The protection regimes have not been assessed

<sup>&</sup>lt;sup>13</sup> The only exception is in the Škocjanski zatok natural reserve which was established by law. On this relatively small wet area territorial planning that included taking of private property was made by the national government.

<sup>&</sup>lt;sup>14</sup> The Decision of the Ministry of Environment and Spatial Planning no. 3518-365/2009-FM, dated 18. 9. 2009.

in the licensing process because they were not incorporated in the municipality territorial plan. Therefore the permit was issued exclusively in line with the general rules of the territorial plan. The Ministry demanded that protection regimes should be read into the existing municipal territorial plan. Consequently rules are supposed to be interpreted and enforced by the administration on a case-by-case basis. The issue did not end there as the developer reapplied for the building permit. The second time the landscape regimes were taken into account, but before the end of the administrative process the local government adopted special interim measures<sup>15</sup> of prohibition of new buildings in the area of the park of Strunjan until the new territorial plan is adopted but no longer than four years.

The developer appealed to the administrative court, objecting that his constitutionally protected property rights were unreasonably abridged. The Court did not agree<sup>16</sup>. The Court stated that due to the fact that the area was part of the park, the territorial planning was subject to a strategic environmental assessment. Building in the area before the assessment is done would limit the options or prejudice the legal status of the area. This sort of risk, according to the Court, was sufficient to grant the interim measures and the limitations on property rights.

#### Conclusion

Even with a limited number of cases and controversies thereof in the protected area, which has a rather short history, as the park Strunjan can show, the legal and practical complexities of managing a landscape and natural park can be daunting. Cooperation of concurring institutions at the local and national level is crucial for the ability of the Institute to "ensure the implementation" of the protection regimes. From the cases and controversies it is clear that only if the municipality and the ministry are on board with the Institute the gap between the law in the books and the law in practice can be smoothened. However, this is usually done on a case-by-case basis which is problematic in the light of legal certainty, rule of law and protection of property rights. The support of the administrative courts for protected areas is also clear from the case law, but judicial rulings can only be reactive and are by their nature limited in scope.

<sup>&</sup>lt;sup>15</sup> The Council of the Municipality of Piran adopted the 7 September 2010 decree of interim measures.
<sup>16</sup> The judgment III U 462/2010 dated 5 September 2011.

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# LOGAR VALLEY NATURE PARK Marko Lenarčič

**Abstract**: In order to preserve the traditional coexistence of man and nature and ensure that the valuable natural and cultural features of the Logar Valley (in Slovene *Logarska dolina*) continue to be preserved in the future, a decree was passed in 1987 proclaiming Logar Valley a nature park. A nature park is a protected landscape where the interaction of people and nature has created a distinctive character with significant ecological, biological, cultural and scenic values.

In 1992, the inhabitants of the area founded the Logarska Dolina Development Company (hereinafter referred to as the "Logarska Dolina Ltd.") and obtained the right from the municipality to take over the management of the Nature Park. Charges were introduced to upkeep the valley for instance by contributions and car parking fees, which are the only public sources of funding. Today, the Park has a nature protection service, basic utilities and tourism infrastructure (regularly maintained), an information system for visitors, sustainable tourist attractions (winter and summer) and a number of well-managed sites of natural and cultural interest. The Logar Valley Nature Park has three employees (nature park ranger, information centre manager and project manager).

Keywords: Logar Valley Nature Park, traffic volume control, management, visitors, sustainable development

# Establishment of the Logar Valley Nature Park

In 1987, the Logar Valley was proclaimed a protected area under the natural park category by the Decree Declaring the Natural Sites and Cultural and Historical Monuments on the Territory of the Municipality of Mozirje (Official Gazette of the Republic of Slovenia, No. 27/1987). The Municipality of Mozirje, then encompassing the entire Upper Savinja Valley, had not actively managed the Park until the conclusion of the Concession Contract on the Management of the Nature Park in 1992, under which the management of the Park was assigned to the Logarska Dolina Ltd. In the following years, the contract was supplemented by several annexes for the municipalities (Mozirje, Luče, Solčava) where the Park was located.

In this way, an innovative protected area management model was established which won recognition and was awarded the "Future in the Alps" prize in 2005. To date, the Park has been managed according to the Decree, the concession contract and the strategy agreed by the municipalities - Mozirje, Luče and, lastly, Solčava. Funds for

covering the management costs have been ensured by collecting entrance fees for vehicles at the entry to the Logar Valley.

In 2001, the Nature Conservation Act was adopted that, *inter alia*, prescribed a management plan for complex protected areas which also included nature parks. The Logarska Dolina Ltd., the Institute of the Republic of Slovenia for Nature Conservation and other institutions have been preparing the bases for the management plan for some time now.

- In 2006, the mayors of the municipalities of Jezersko, Kamnik, Luče, Preddvor and Solčava signed an agreement with the Minister for the Environment on the establishment of the Kamnik-Savinja Alps Regional Park. During the same period, the Logarska Dolina Ltd., as a coordinator of the regional park establishment process, launched the Interreg project "Sustainable Development of Kamnik-Savinja Alps". The project comprises the following components:
- arrangement of infrastructure for visitors
- expert basis for the regional park establishment
- preparation of the management plan for the Logar Valley Nature Park.

#### **Geographical Features of the Area**

The area of the Logar Valley Nature Park is entirely within the Municipality of Solčava and it borders with the municipalities of Jezersko, Kamnik and Luče (on a single point at Ojstrica), and with Austria, namely the Municipality of Železna Kapla. The Nature Park covers the entire area of the glacial Logar Valley, which is one of the seven northward opening glacial valleys of the Kamnik-Savinja Alps, extending from the mountains (Ojstrica 2,350m, Planjava 2,394m, Turška gora 2,252m, Koroška Rinka 2,433m, Mrzla gora 2,203 m), across the walls and cirques (Okrešelj, Klemenča jama) and diversely broken slopes to a prominent valley bottom, ending in a frontal moraine of a former glacier on the northern margin of the Park. The Savinja River originates in the Logar Valley, first as the Rinka Waterfall, then it sinks and appears again as the Črna Stream which joins the Jezera Stream in the lower part of the valley and from that point on it becomes the Savinja River.

The Kamnik-Savinja Alps are an independent geotectonic unit of the Southern Limestone Alps, broken by transverse valleys from north to south. The ridges extend in the Alpine west-east direction for about 66km, while the north-south breadth is from 15 to 20km. They are the easternmost extension of the Alpine chain, located between the Western Karavanke in the north-east, the Eastern Karavanke in the north, the Velenje Hills in the north-east, the Ložnik Hills and Savinja River Plain

in the east, and the varied Posavje Hills and the Sava River Valley in the south. The topographic features and the extension of ridges are roughly determined by a system of tectonic faults running mostly in the so-called Dinaric direction (from north-west to south-east) or transversely to it. The ridges stretch in two predominant directions, namely in the so-called Alpine west-east direction and in the southeast-northeast direction. The limestone plateaus are tectonically thrust over the terrain.

The area has a varied geological structure. The oldest rocks, exposed on the lower slopes in the northern part of the Logar Valley, date from Palaeozoic times. There the surface is impermeable and slightly rounded in contrast to the steep terrain of Mesozoic carbonate rocks, which form most of the area. The most common rocks are Triassic limestone and dolomite, with the former dominating. Due to the higher solubility in water and crackiness of carbonate rocks, typical mountain Karst forms have developed in many places (e.g. karren, flutes, kettles, shafts, caves, etc.). The largest Karst formations are the Karst plateaus without permanent watercourses, with strong Karst springs at their bottom. Because of the large difference in altitude between the land surface and groundwater level, the vertical flow of water prevails and forms shafts, while horizontal caves are generally the consequence of hydrological conditions in past periods.

Rock belts determine the basic pedological areas. Unconsolidated raw soil prevails on rocky surfaces composed of carbonate rocks (regosol), while shallow black soil has developed on fossil scree. Redzina can be found on most other carbonate slopes, and brown calcareous soil on mildly inclined surfaces. Dark redzina is common on dolomite bedrocks.

#### **Sites of Natural Interest**

There are over forty registered sites of natural interest in the Logar Valley, including waterfalls, rock needles, caves, rock shelters, glacial boulders, trees of enormous dimensions, flora and fauna. The Rinka is one of the highest waterfalls in Slovenia (90 metres). Flowers growing in the park include the rare lady's-slipper orchid (*Cypripedium calceolus*), Slovenia's largest orchid, and several endemic plant species, among them the Julian mouse-ear chickweed (*Cerastium julicum*), the crimson leek (*Allium kermesinum*) and the Kamnik daisy (*Leucanthemum lithopolitanicum*). The golden eagle (*Aquila chrysaetos*) nests in the wider area around the Logar Valley, and the valley is also the habitat of the peregrine falcon (*Falco peregrines*).

The Logar Valley Nature Park is beautiful at all times of the year. In spring, the first flowers are followed by soft grasses, the larches turn green and the beeches come into leaf. In summer, the delicate green of the valley floor becomes a grassy meadow

surrounded by dark green forests, with the sheer faces of the Kamnik-Savinja Alps towering above them into the blue sky. Autumn, when the larches below the rocky cliffs glow fiery red among the dark spruce and, further down, the leaves of the beeches turn to gold, is the perfect time for quiet walks in the silence of the forest. On sunny winter days there is nothing better than trekking on skis across the dazzling snowfields of the Logar Valley or gliding down the valley's slopes.

On your way through the Logar Valley, whether you are alone or in a guided group, you will find interesting places to stop and discover many things, learn about the glacial valley, the forest, wild animals, birds, the life of foresters, charcoal burning and other interesting facts that bear witness to the extraordinary connection of people and nature through centuries.

The 7km route takes approximately two hours, slightly longer with a guide, or you can choose a shorter section. You can set off on the trail in the lower part of the valley, at a height of 730 metres above the sea level. The route continues along the valley with a gentle climb towards the forest on the edge of the meadows to the Rinka Waterfall (1,100 metres above the sea level).

In accordance with the Nature Conservation Act, the primary purpose of the Nature Park is to preserve the quality and long-lasting intertwining of man and nature and the associated *high environmental, biodiversity and landscape values of the Logar Valley.* 

#### Land Use

At present, forest is the prevailing land-use type in the Logar Valley. In the high part of the valley there are large areas of infertile land, while forests, especially in the valley, are intertwined with agricultural land, in particular meadows and pastures.

The settlement of Logarska Dolina (surface area: 44.2 km<sup>2</sup>) is located in the Logar Valley and Matkov kot. It comprises secluded farms, scattered in the valley of the Črna Stream and on the slopes above the Jezera Stream, on the sunny side of Matkov kot, at a height of 720m to 1,215 metres. The settlement density is higher at Plesta, in the central part of the Logar Valley and at the confluence of Črna and Jezera Streams, the beginning of the Savinja River. Logarska Dolina is a centre of tourism in the Solčava region where tourism and mountaineering were popular already in the XIX<sup>th</sup> century. In addition to tourism, other important sources of income are forestry and animal husbandry, in particular raising of sheep and goats. The table below shows the basic information on the population of the Logarska Dolina settlement.

Number of inhabitants	95
Population density/km <sup>2</sup>	2
Natural increase	2
Number of economically active population	42
Population with at least secondary education	55

Table 1- Basic information on the population of the Logar Valley Nature Park

# Management

Most of the land in the Nature Park area is privately owned by farmers possessing relatively large farms. Some land is owned by the Diocese of Ljubljana, the Mountaineering Society of Celje which bought the land before the Second World War with the aim of establishing a nature park, the Alpine Association of Slovenia and the Municipality of Solčava (municipal road).

The public forestry service within the Logar Valley Forest District is performed by the Slovenia Forest Service. All forest work is done by the owners. In the largest part of the area, hunting and wildlife management within the former Kozorog State Hunting Ground is carried out by the Slovenia Forest Service, while a part of the Nature Park is formed by land belonging to the Solčava Hunting Club. Water management is performed by the Slovenian Environment Agency which, so far, has not assigned the concession for performing public water service in the area. Spatial planning, regulated by the spatial plan, is under the responsibility of the Municipality.

Based on the concession contract, the Logarska Dolina Ltd. is responsible for the management and development of the Nature Park - 23 stakeholders – land owners and tourist facility owners in the valley.

The long-term vision of the Logar Valley Nature Park for the period 2020-2030 is founded on the attractiveness of the Logar Valley, reflected in the pristine state of the environment and many sites of natural interest that draw nature lovers to this place. It represents a substantial part of the cross-border Kamnik-Savinja Alps Regional Park. The success of the Nature Park is based on sustainable development and the quality of tourist services. The farms, which have shaped the cultural landscape over the centuries, offer a high quality of life and provide work for the dynamic local population. Typical natural habitats, the variety of species and the image of cultural landscape are well preserved, while the ecosystems and inhabitants of the valley have successfully adapted to climate change.

#### Objectives

In line with the purpose and long-term vision, the objectives of the Logar Valley Nature Park are determined for three fields of activity: preservation of natural and cultural heritage, tourism promotion and visit management, and development. All these activities are performed in compliance with the regulations and programming documents of the European Union and the Republic of Slovenia and based on good practices of protected area management. Within the scope of natural and cultural heritage preservation, the Nature Park shall maintain the favourable status of protected and other species and habitats, ensure the preservation of natural and cultural values of national and local significance, provide safety of water and forest resources and safeguard against their depletion.

In the field of visit management, the goals of the Nature Park are to:

- provide a top experience of the Alpine nature and culture, and recreation possibilities for all groups of visitors
- ensure adequate information and presentation of the natural and cultural features in the Logar Valley area
- diminish the negative impacts of visitors on nature, infrastructure and local community within the limits of acceptable change.

Restriction of motor vehicle access to the valley and progressive introduction of electric transportation in the Nature Park may also contribute to the achievement of these goals.

The development objectives of the Nature Park are:

- ensuring economic and demographic stability, survival and sustainable development of the farms in the Logar Valley
- ensuring a high quality of life for the residents
- providing jobs for young people and, at the same time, balance forestry, agriculture, tourism and other activities with the vision and goals of the Park
- ensuring high-quality tourism products in the Logar Valley and the Solčava region.

#### Strategy

The above-stated objectives will be achieved through the following strategic directions:

#### Management structure in relation to land ownership

Management is performed by the Logrska Dolina Ltd. whose owners are the owners of land in the Logar Valley and the providers of tourist services. In this way, integrated management as well as sustainable development are ensured in the Park.

## Integration of public services

In accordance with the concession contract with the Municipality, the Park manager performs nature protection public services, including the public utilities in the Park area and tourism development services in the entire territory of the Municipality of Solčava. The manager also endeavours to obtain a concession for the provision of water management services and any other public services for which concessions will be issued.

#### Sustainable land management

In order to maintain a favourable status of species and habitats and to preserve the natural values and landscape image, the land owners manage their land in a sustainable way, depending on their intended use as determined in 2007. A large part of the Logar Valley (Conservation Area 1) is reserved for the development of natural processes. Forest management is performed on the basis of forestry plans while organic farming is practiced wherever possible.

#### Renaturation wherever necessary

Most of the area enjoys a good preservation status; however, it is necessary to consider the possibility of renaturation where past human interventions have significantly altered the functioning of ecosystems and the landscape image. This primarily involves a gradual renaturation of the Kotovec Stream with regard to the protection of agricultural land, and the abandonment of overhead electrical power lines and communication lines.

#### Traffic regime and entrance fee

In the Nature Park area traffic is regulated with the aim of reducing the negative impacts on the environment and ensuring a high-quality experience for visitors. Entrance/parking fee is collected for the entry to the Park and this is the main financial source for its management.

#### Promotion of sustainable tourism in the entire Upper Savinja Valley

The Logar Valley is the main tourist attraction in the Upper Savinja Valley; however, sustainable tourism development, visit management, and high-quality tourist products and services should be ensured in the wider surroundings of the municipalities of Solčava and Luče. For that reason, it is the park manager's task to provide technical support to the sustainable development of tourism and partnerships in the entire Upper Savinja Valley.

#### Heritage preservation for future generations

The present appearance and quality of the Logar Valley Nature Park is founded on centuries of experience and interaction between the local population and nature. Therefore, it is the Park's duty to preserve its heritage and, on this basis, establish a sustainable development model which will ensure a high quality of life for the future generations in the valley.

#### Integration with the Kamnik-Savinja Alps Regional Park and other networks

The Logar Valley Nature Park has gained a wealth of professional experience and reputation at home and abroad through the successful provision of nature conservation and sustainable development. On this basis, the Logarska Dolina Ltd. was entrusted with a coordination role in the establishment of the Kamnik-Savinja Alps Regional Park. In the future, the Logar Valley Nature Park will become part of the regional park, and the Logarska Dolina Ltd. will endeavour to maintain its central professional role in the management of the Nature Park in partnership with the owners.

# SEČOVLJE SALINA NATURE PARK\* Andrej Sovinc

Abstract: The Sečovlje Salina Nature Park (SSNP) has been protected at the national level since 2001 with the aim of preserving nature and the associated cultural heritage of special national and international significance, founded on a variety of habitats embedded into the salt water environment. The continuation of traditional salt production plays a crucial role in achieving the primary goals of nature park management which are the preservation of valuable natural features, species, habitat types and the landscape, as well as facilitating the experience and knowledge of the park. The sustainable use of natural values in a way that does not restrict or even reduce their value, but nevertheless brings about good business results, represents a challenge for the Park's operators. The traditional use of natural values can be maintained only by the development and adequate marketing support of traditional products, while the preservation of favourable statuses of target species and habitats can be achieved through the absorption of European funds earmarked for the conservation of biodiversity in the Natura 2000 sites. There has been as significant increase in the number of the Park's visitors and employees.

**Keywords:** management of protected areas, traditional uses, use of natural values, traditional products

# The Establishment of the Protected Area

The Sečovlje Salina Nature Park has been protected at the national level since 2001 by the Decree of the Sečovlje Salina Nature Park (Official Gazette of the Republic of Slovenia, No. 29/01, hereinafter referred to as the "Decree"), adopted by the Government of the Republic of Slovenia. According to the Decree, the purpose of protection is to preserve the valuable natural features and biodiversity of special national and international significance, founded on a variety of habitats and specific plant and animal species, which are embedded into the salt water environment and dependent on the traditional salt production.

The Municipality of Piran declared the area a nature park already in 1990 (Ordinance of the Municipality of Piran Declaring the Sečovlje Salina Nature Park, PN – Official Bulletin, No. 5/90). The Nature Park - established at the municipal level - did not have a manager and, therefore, not all provisions of the rather general Ordinance

<sup>\*</sup>The article is summarised from the SSNP Management Plan (www.kpss.si) and the article by A. Sovinc. 2012. Assessment of the Use Values of the Sečovlje Salina Nature Park (Slovenia), *Annales*, Series historia naturalis, year 22, no. 2/2012.

were implemented. Upon the adoption of the Decree, the municipal Ordinance ceased to apply in so far as it related to the conservation of nature (the code of conduct for nature parks), but it still applies in relation to the protection of cultural heritage (the code of conduct for cultural monuments).

# The Description of the Main Natural, Landscape and Cultural Phenomena Decisive for the Declaration of the Protected Area

#### Living Nature

Since man has been regulating the water in this region for centuries and transformed the morphology of land into a characteristic network of saltpans, special conditions have been created, on which the existence of specific habitats, plant and animal species depends. A detailed review of the representation and distribution of habitats and species in the Park reveals that their greatest abundance occurs in the areas where human influence has been limited; in particular, this refers to the maintenance of the water regime. Such is the whole of the Fontanigge area, while at Lera the diversity of species and habitat types is lower, especially in the areas of high water density and salt crystallisation, where the living conditions are significantly less favourable due to the high salinity. In that area, the human disturbances are most felt because of the permanent presence of people/salt workers in the salt fields. Concrete and asphalt surfaces that have been accompaning salt production for decades also have a negative impact on the species diversity.

#### Habitat types

The mapping of a comprehensive inventory of habitat types has not yet been done in the Park. Basic data are available only for the habitat types that are maintained at favourable status as a priority (Decree on Habitat Types, Official Gazette of the Republic of Slovenia, Nos. 112/03 and 36/09), included in Annex I of the Council Directive 92/43 EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L 206, 22 July 1992: 7; hereinafter referred to as the "Habitats Directive"), their extent and locations, namely:

- pioneer stands consisting of species of the *Salicornia* genus and other annuals colonising mud and sand (1310), ca. 11 ha
- spartina swards (Spartinion maritimae) (1310), ca. 16 ha
- mudflats and sandflats not covered by seawater at low tide (1140), ca. 20 ha
- Mediterranean-halophytic shrubs (Sarcocornetea fruticosi) (1420), ca. 12 ha
- Mediterranean salt meadows (Juncetalia maritimi) (1410), ca. 60 ha
- estuaries (1130), ca. 22 ha.

## Plant species

At the Sečovlje salt pans there are 45 plant species that are included in the Red List of endangered plants in Slovenia (Rules on the Inclusion of Endangered Plant and Animal Species in the Red List, Official Gazette of the Republic of Slovenia, Nos. 82/02 and 42/2010). The most important species include: **rare species** (R) – spartina swards (*Spartinion maritimae*), sea rush (*Juncus maritimus*); **vulnerable species** (V) – cord grass (*Puccinelia palustris*), sea lavender (*Limonium angustifolium*), common glasswort (*Salicornia europaea*), shrubby swampfire (*Sarcocornia fruticosum*), Glaucous glasswort (*A. glaucum*), sea purslane (*Artiplex portulacoides*), golden samphire (*Inula critmoides*), common sea-blite (*Suaeda marittima*), opposite-leaved saltwort (*Salsola soda*); **endangered species** (E) – Roman hyacinth (*Bellevalia romana*), Tatarian orache (*Atriplex tatarica*).

#### Microorganisms

Petola is a specific feature of the Sečovlje salt pans, a microbial mat that covers the bottom of the crystallisation basins and represents the basis for the traditional salt production. It is a diverse "living" microbial basis. Seven hundred years of continuous development have enabled the diversity of microorganisms which can be found only in very few other salt pans in the world.

#### Animal species

The presence of 6 species of amphibians, 9 species of reptiles, 293 species of birds and 11 species of mammals has been recorded in the Park. The numbers of invertebrate and fish species are not known.

# 1. birds

Among the species identified as a target in terms of providing conditions for their existence, particularly relevant are:

a) Breeding birds: Kentish plover (Charadrius alexandrinus) – about 40 pairs, little tern (Sterna albifrons) – about 40 pairs, common tern (Sterna hirundo) – about 60 pairs, black-winged stilt (Himantopus himantopus) – about 50 pairs, pied avocet (Recurvirostra avosetta) – about 20 pairs, yellow-legged gull (Larus cachinnans/ michahelis) – from 150 to 250 pairs, little bittern (Ixobrychus minutus) – 1 to 2 pairs periodically, great reed warbler (Acrocephalus arundinaceus) – up to 5 pairs, etc.; there are some other species that nest only here or at few other locations in Slovenia, among them the common shelduck (Tadorna tadorna) and periodically the common redshank (Tringa totanus).

b) Seasonal, overflying and wintering bird species: black-throated loon (Gavia arctica) - a few tens of them regularly winter at sea, red-throated loon (Gavia stellata) – rare specimens over-wintering, pygmy cormorant (Phalacrocorax pygmeus) - rare specimens over-wintering, shag (Ph. aristotelis) - up to 1,000 specimens spend the summer at sea in front of the saltpans and on frontal embankments, black-necked grebe (Podiceps nigricollis) - up to 100 specimens spend the winter at sea in front of the saltpans, Eurasian wigeon (Anas penelope) - from 300 to 800 specimens in winter, little egret (Egretta garzetta) - up to 100 and more specimens in autumn, great egret (Egretta alba) - up to 20 specimens throughout the year, up to 50 in autumn, Mediterranean gull (Larus *melanocephalus*) – from 400 to 800 specimens in summer, vellow-legged gull (Larus cachinnans/michahelis) - several thousand specimens in summer, Sandwich tern (Sterna sandvicensis) - occasionally encountered at sea in front of the salt pans, dunlin (*Calidris alpina*) – individual specimens and small groups throughout the year, 300 and more specimens in winter, ruff (Philomachus pugnax) – from some tens to some hundreds overflying, common kingfisher (Alcedo atthis) – up to 10 specimens regularly in winter.

#### 2. other animals

Salt pans with increased salinity are a habitat for numerous aquatic animals such as: brine shrimp (*Artemia parthenogenetica*), various shells, marine worms and two fish species, Mediterranean killifish (*Aphanius fascinatus*) and Caucasian dwarf goby (*Knipowitchia caucasica*). The former fish species is listed in the Annex of the Habitats Directive which requires the Member States of the EU to provide special protection measures for the conservation of a favourable status of this fish. Salt pans offer abundant food for juvenile fish that subsequently migrate to the sea.

At the Sečovlje salt pans, the fauna of terrestrial vertebrates is modest, although formed by true representatives of Mediterranean species, for instance, among small mammals, the wood mouse (*Apodemus sylvaticus*), lesser white-toothed shrew (*Crocidura suaveolens*), Etruscan shrew (*Suncus etruscus*), house mouse (*Mus domesticus*), Eurasian harvest mouse (*Micromys minutus*), black rat (*Rattus rattus*) and southern white-breasted hedgehog (*Erinaceus concolor*). Among the mammals, which are more or less regularly and frequently present at the salt pans, there are roe deer, badgers, hares, foxes and beech martens (*Martes foina*) among beasts. Interesting representatives of animal species are the Italian wall lizard (*Podarcis sicula*) and the lesser mouse-eared bat (*Myotis blythii*), while a special case is that of the European pond turtle (*Emys orbicularis*). The latter is listed in the Annex of the Habitats Directive which requires the Member States of the EU to provide special protection measures to maintain its favourable status.

#### Inanimate Nature

The Sečovlje Salina is part of the Slovenian Istria, with a Mediterranean climate, characterised by temperatures between 0 and 4°C in January and average temperatures between 20 and 22°C in July. The area receives most rain between September and November (the average value of monthly rainfall for September is 150mm) and the least rainfall in February (up to 38mm). The most important winds are the daily thermal wind (mistral) blowing from the sea towards the valley and the night wind "burin" blowing in the opposite direction.

A relatively new sediment in the basis of the Sečovlje salt pans lies up to 90 metres deep and it was deposited mainly by the Dragonja River. Layers of sandy clay and clayish pebbles alternate in the lower part.

Man has been regulating the water in the saltpans for centuries. To this end, a system of embankments and channels, sluice mechanisms and overflows have been constructed. Frontal embankments on the seaside prevent the sea to flood the salt pans (and the surroundings) during high tides and storms. Embankments along the Dragonja and Drnica Rivers and the St. Bartholomew Channel (in Slovene *Jernejev kanal*) prevent the water from the catchment areas of the mentioned watercourses to overflow the salt pans. In the predominantly saline environment of salt pans, freshwater sources are of special value. Alongside the abovementioned watercourses there is a quite large freshwater marsh next to the Korea area, supplied by groundwater (next to the former coalmine) and surface torrential tributaries running from the slopes above Sečovlje and the hamlets. There are freshwater springs (fontanela) on the left side of the Dragonja River. Detailed hydrological data on freshwater springs and other water bodies are not available.

# Cultural Heritage and Landscape

The Sečovlje salt pans and the nearby Strunjan salt pans are the northernmost still active salt works in the Mediterranean. Owing to a centuries-long human activity, a typical saline ecosystem has developed, comprising rare and endangered habitats and typical plant and animal species. The Sečovlje salt pans are one of the few salt pans where salt is produced according to centuries-old procedures. The northern part of the Park, where salt is still produced, is called Lera. The Drnica Stream separates it from the southern part of the Park with abandoned salt pools, called Fontanigge, where the medieval type of salt pools which operated until the end of the '60s of the XX<sup>th</sup> century has been preserved. The typical features of Fontanigge are separate salt fields and seasonal dwellings of salters. The Fontanigge salt pan has three main channels that connect the area with the sea: Giassi with Cavana 131, Curta and

the picturesquely winding Pichetto Channel with many branches. Attached to the channels and their branches (cavana) there are salt fields of various shapes and sizes. The salters' houses and warehouses are aligned along the channels. There are 117 buildings (Benčič and Žagar 2003) preserved in various stages which bear witness of a typical salter's settlement, the only one preserved in the Northern Adriatic. The village has also been an important co-creator of a unique cultural landscape, determined by salt pans at the junction of land and sea.

The Lera salt pans were modernised in 1904. The previously separated salt fields were combined into a single one and the brine was circulating by means of electric pumps that replaced the pumps run on gasoline. Crystallisation pools are concentrated in one place to simplify the harvesting and transport of salt. Evaporation and crystallisation pools are rectangular and arranged in a uniform grid floor, consisting of channels and their branches, earth banks, buildings on the walled levees and salt fields with sluices. At Lera, the method of salt production has changed and seasonal lodging on the salt pans is no longer needed. Therefore, salt-pan houses have been replaced by wooden sheds at the crystallisation pools, intended for resting of the salters and storing of working tools. Other buildings, grouped at one place, are limited to the necessary minimum: the administrative building, pumping station and workshops.

Both parts, Fontanigge and Lera, are traditional salt works, as both methods of salt making are based on the exploitation of natural resources: sea water, sun, wind and high and low tides, with predominantly manual labour. The salt pans of Strunjan and Sečovlje are the only salt works on the eastern coast of the Adriatic Sea where traditional methods are used throughout the process, namely by daily harvesting of salt from the brine on biosediment – petola. Since these salt pans are the only ones preserved of the many salt works in the Gulf of Trieste, their evidence bearing is even more valuable.

#### National nature conservation importance

## Ecologically Important Area

On the basis of the fourth paragraph of Article 32 of the Nature Conservation Act, the Government of the Republic of Slovenia issued a Decree on Ecologically Important Areas (Official Gazette of RS, No. 48/04), identifying the Sečovlje Salina with Seča as an ecologically important area that significantly contributes to the conservation of biodiversity.

## Valuable Natural Features of National Significance

On the basis of the sixth paragraph of Article 37 of the Nature Conservation Act, the Minister of the Environment issued the Rules on the Designation and Protection of Valuable Natural Features (Official Gazette of RS, Nos. 11/04, 70/06 and 58/09), declaring the Sečovlje Salina a valuable natural feature of national importance, comprising four areas of natural value: Sečovlje – next to the coalmine, Sečovlje – old salt pans, Sečovlje – Stojbe and Sečovlje – Curto and Pichetto.

#### International nature conservation importance

#### Special Protection Area (Natura 2000 Site), Special Area of Conservation

In accordance with the Habitats and Birds Directives, the Government of Slovenia designated special protection areas (Natura 2000 sites) and potential special areas of conservation (Decree on Special Protection Areas – Natura 2000 Sites, Official Gazette of RS, No. 49/04) in April 2004, before joining the European Union. Moreover, in accordance with the provisions of the Resolution on the National Environmental Action Plan 2005-2012 (Official Gazette of RS. No. 2-3/06), the Government prepared the Operational Programme – Natura 2000 Management Programme for the Period from 2007 to 2013, namely:

- I. special Protection Area (SPA): the entire Sečovlje salt pans, including a part of the open sea in the Bay of Piran
- II. special Areas of Conservation (SCI): St. Bartholomew Channel and the Fontanigge area.

#### Ramsar Site

On 6 January 1993, the area of Sečovlje salt pans was included on the Ramsar List of Wetlands of International Importance under the auspices of the Convention on Wetlands of International Importance especially as Waterfowl Habitat, Ramsar 1971 (Act Notifying Succession, International Treaties, No. 15/92). The boundary of the area corresponds to the boundary of the Park.

# Socio-economic Characteristics and Importance of the Park in the Light of Sustainable Development and Sustainable Use of Natural Resources

There are no permanent residents in the Nature Park. However, residents in the surroundings are traditionally closely linked with the Park. The socio-economic characteristics are expressed through management, operations and uses present in the Park and for which interests have been disclosed.

## Salt production as a mining economic activity

Traditional salt making, once a key driver of the regional economy, has become uncompetitive in domestic and European markets due to the intrusion of cheap salt produced on the African coasts and the European mines of rock salt. Thus, salt production at Fontanigge was abandoned in 1967, while it was mostly stagnating at Lera until the arrival of the new owner, the Soline Salt-Making Company Ltd. (hereinafter referred to as "Soline Ltd."). The current annual production of salt at Lera reaches up to about 3,500 tonnes. At Fontanigge the commercial salt production is not carried out; however, water management activities are still implemented since the water needed for salt production is pumped to the salt fields at Lera.

The carrying out of traditional salt making at Lera has a direct impact on the socio-economic development of the region. In addition to the regular and seasonal employment in the salt fields, the restoration and maintenance of salt pans provide work for a number of subcontractors and service providers (construction, engineering, carpentry, gardening, transport and other works); salt-making also offers additional opportunities for the development of tourism, catering and accommodation services and more, and helps to increase the visibility of the area. The Soline Ltd. has developed two brand names (Solnce and Lepa Vida), associated with salt and other co-products arising from the production of salt, and the SSNP brand name associated with the Nature Park. Also, the spas at Portorož and Piran have included salt products in their offer.

Traditional salt making is important for the protection of biodiversity because it establishes and maintains habitats with different salinity as well as extreme habitats for plant and animal species that cannot survive elsewhere due to their particular adaptations. From the perspective of cultural heritage protection, traditional salt making is one of the key levers to achieve integrated conservation of protected values in the area.

Demonstration of medieval salt making as an activity of cultural heritage

The Museum of Salt Making, a unit of the "Sergej Mašera" Maritime Museum



in Piran, demonstrates the medieval salt production methods at Fontanigge. The maintenance of salt fields and presentation of salt making activities are an integral part of the museum collection. Salt production processes are a protection measure, as defined in the Decree designating the area as a cultural monument of national importance.

#### Tourism and recreation

Individuals or small groups, generally of up to 15 people, engage in physical recreation such as cycling, walking, running and similar activities. Although they visit the Park with the purpose of recreation and not sightseeing, they have to pay the entrance fee.

The Rowing Club Piran has its premises in the Park and its members practise rowing in the Drnica Channel. Recently, kite surfing has become very popular at the mouth of the St. Bartholomew Channel and at sea in front of the salt pan embankments. On windy days, more than ten such recreationists gather on the parking lot at the Ribič Inn. Occasionally, people come to the Park to try their model planes, boats and cars.

## Agriculture

Agricultural activities are carried out only in the third protection zone of the Park. Agricultural land covers approximately 42ha. On the left bank of the Dragonja River there are mainly meadows and pastures that change into bushes and reed towards the river mouth (22ha); in the strip between the St. Bartholomew Channel and the Lucija-Sečovlje road there is arable land with fields, orchards and vineyards (7ha); vineyards prevail at Prade (next to the airport runway and Stojbe), and there is some abandoned and overgrown arable land (about 13ha). From the standpoint of environmental impacts and socio-economic aspects, Prade is the most important area. Here, most owners and tenants of the land are included in the programmes of integrated agricultural production.

# Mariculture

Mariculture activities are carried out to a limited extent at the mouth of the St. Bartholomew Channel where companies and individuals have established their businesses. The activities take place at sea; shellfish farms and fish-farming cages are located in the bay, in front of the salt pans and outside the Park area; however, the Park surfaces are used for the disposal of shell remains, storage and cleaning of vessels.

## Hunting and fishing

Hunting and fishing are prohibited in the Park. In accordance to the Wild Game and Hunting Act (Official Gazette of RS, Nos. 16/94 and 17/08), the Park is a closed hunting area due to a permanent ban on hunting.

#### Traffic and moorings

At Lera, transport activities are carried out to meet the needs of salt-making – maintenance, transport of salt and delivery. Only some Park employees, mooring tenants at the Drnica Channel, tenants of salt fields and service areas (carpentry), business partners, maintainers and operators come into the Park by motor vehicles. Traffic takes place along the asphalt road from the entrance into the Park to the administration building and warehouses and, to a smaller extent and exclusively for the purposes of salt production, on the asphalted path through the salt pans.

As a rule, visitors of the Park do not enter by motor vehicles (not even buses), but occasionally the members of the Rowing Club and their companions are allowed to enter the Lera area by motor vehicles.

At Fontanigge, traffic takes place in particular for maintenance purposes, museum activities and visits to the Museum of Salt Making.

Water transport takes place through the channels of Drnica and St. Bartholomew. The Drnica Channel is used as a transitional waterway by the locals who have moorings outside the Park in the Channel Grande – Drnica section at Sečovlje.

#### Science and research activities

As a unique ecosystem and an area of cultural heritage and tradition, salt pans are very interesting for scientists and researchers. These usually first contact the Park administration and the staff responsible for monitoring and control to obtain the necessary prerequisites to undertake research work. The personnel of the Park and the "Sergej Mašera" Museum are also involved in the preparation of various research papers and diploma theses.

#### Events in the park

The Park often organises art exhibitions and educational events at the Lera Sales Gallery and the Multimedia Centre. In the hall of the Multimedia Centre or in front of it there are occasional performances of artists and singer-songwriters. During the Salt Festival and on the occasion of the Museum's Open Doors Day (Museum Night), the entrance and guided tour of the museum collection are free.

Recognised artists often create their works in the Genius Loci Workshop (their works are later exhibited in the Lera Sales Gallery) and occasionally at the painting workshop Ex-Tempore, organised by the local Taperin Tourist Association.

On the prior consent and the conditions set by the Park's operator, wedding ceremonies take place in the Park, taking into account the restrictions on the number and movement of participants, the rules of conduct and photographing and limited access of motor vehicles.

The Park also prepares a traditional fun game or "team building" of the salters. The "Sergej Mašera" Maritime Museum organises various events in the Park, such as workshops, camps and meetings.

# Management of the Park and the Involvement of Local Communities, the Civil Society, etc.

The concession contract between the concessionaire, the Soline Salt Making Company Ltd., and the grantor of concession, the Republic of Slovenia, on the provision of nature conservation public service (management of the protected area) was concluded on 12 July 2003 for a period of twenty years, i.e. until 2023 (Concession Contract for the Management of the Sečovlje Salina Nature Park and the Use of This Natural Asset, hereinafter referred to as the "Concession Contract") pursuant to the Act and Decree on the Concession for the Use of the Sečovlje Salina Natural Values and the Concession for the Management of the Sečovlje Salina Nature Park (Official Gazette of RS, No. 11/2002).

A concessional relationship between the contracting partners brings about some benefits for the concessionaire and the grantor of the concession. In particular, these are: the company obtains from the State, free of charge, the land and the existing infrastructure for the implementation of salt-making activities and other uses; through salt production, the company contributes to the conservation of nature, management of the Park and the protection of cultural heritage which are in the public interest and under the care of the State; the State provides the complete security of salt pans against the adverse impacts of the sea and high waters; the company invests its own funds in the immovable property of the State, thereby increasing the value of state assets; the company may market the brand name and the landscape image of the Park.

Without interfering with the Park's objectives the local population is offered the chance to live in coexistence with the Nature Park. Thus, for example, traditional events organised by the local community should be allowed by the Park, as a rule on its outskirts, so that the Park's objectives are not curtailed.

# The Contribution of the Protected Area to the Progress of the Local Population and Sustainable Development

# Increase of the Number of Park Visitors

Especially the diverse offer of visitors' programmes increase the number of the Park's visitors. A larger number of visitors increases the revenues which are used to manage the Park. Table 1 and Figure 1 show the number of visits and trends in the Sečovlje Salina Nature Park.

Month	Year								
	2002	2003	2004	2005	2006	2007	2008	2009	2010
January				542	410	526	406	794	580
February				878	766	853	802	681	654
March				1,286	1,211	1,579	1,509	1,094	1,142
April				1,711	2,125	2,770	1,568	2,370	4,377
May				1,692	4,529	4,617	3,726	4,682	3,373
June				1,310	6,209	4,789	2,789	3,806	4,365
July				1,714	1,993	2,927	1,846	2,422	2,309
August				2,367	2,791	2,177	1,957	1,693	3,107
September				2,084	4,674	4,064	3,007	4,585	4,266
October				1,706	3,990	4,709	2,405	4,097	3,050
November				1,236	2,373	1,450	1,180	1,224	1,030
December				454	351	917	264	653	590
TOTAL	8,000*	20,000*	25,000*	16,980	31,422	31,378	21,459	28,101	28,843

Table 1 - Total number of visitors and their distribution by month between 2002 and 2010

\* For the years 2002, 2003 and 2004, the number of visitors is an estimate. For other years the number is based on the number of entrance tickets sold.

Source: SSNP Records



Figure 1 - Trend in visits to the Sečovlje Salina Nature Park by month in 2008 and 2009

Source: SSNP Records

The table and graph of visits to the Park do not include the visitors of the Route of Health and Friendship – Parenzana, which is part of the Park, but the entrance fee is not charged for them.

The self-generated income, donations and funds from international projects, which the Park's operator runs or participates in, represents about three quarters of the funds needed for the operation of the Park; the Republic of Slovenia, the founder of the protected area, contributes only a quarter of the funds necessary for the Park's operation.

# Increase in Direct Employment

Traditional salt making is consistent with the objectives of biodiversity preservation and management services in the Park which also include public water management services. Table 2 shows an increase in the number of employees of the company that manages the Nature Park and holds the concession for the production of salt in the Sečovlje Salina Nature Park. The data refer to the years from 2002 to 2010.

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010
Number of									
employees	19	35	44	48	48	47	52	57	80
at the end								• •	
of the year									



In 2010, out of the total number of employees in the company that manages the nature Park and is engaged in traditional salt production, 21 jobs were dedicated to management tasks, while the rest related to salt production, water management, maintenance, administrative work and marketing. The number of indirect employments (seasonal and contract workers) has not been ascertained yet, but it is certainly high, by far exceeding the number of permanent jobs in the Park; during the salt-harvesting period the number of seasonal workers alone amounts to several dozens.

# Priorities for the Period 2014 – 2020

Objective 1: Preservation of valuable natural features, species, habitat types and the landscape

The direct protection of species and habitat types ensures the maintenance, care and improvement of their environmental conditions. Environmental conditions, which are changing due to the impacts of human activities and natural processes, can be improved or maintained in a favourable status by activities targeted to individual species or habitat types. Measures and activities prevent or reduce the effects of some threat factors. For some species, favourable environmental conditions are provided by ensuring the necessary conditions for natural succession in particular areas. The regulation of the water regime is of vital importance.

The effective and appropriate implementation of protective measures depends on the timely detection of changes in the Park and the relevant scientific and research data. This can be achieved by constant monitoring and analysing the state of nature according to the accepted standards and comparable criteria, as well as continuous adaptation of management plans and tasks to the monitoring results.

The direct supervision in nature, which ensures respect for and observance of protective regimes and policies, is key to achieving the conservation goals. Within the direct supervision of nature, visitors and other users of the Park are guided, informed, controlled and their awareness raised on the spot, as well as penalised in the case of violation of the protection regime.

#### Objective 2: Enabling the experience and knowledge of the Park

The Sečovlje Salina is a small protected area, recognisable for its specific ecological characteristics. The area provides possibilities for learning about the ecosystem, the laws of nature, awareness raising of the interdependence between man and nature and observing the particularities of the salt pan landscape and cultural heritage as witnesses of integration and coexistence of man and nature and, in particular, expe-

riencing nature as a value and adopting a respectful attitude towards nature and its values.

From the protection point of view, an optimal visit is balanced with the carrying capacity and guided in such a way that it does not threaten the natural values, biodiversity and other values of the Park, and carried out in a way that enables efficient and friendly learning about and experiencing the Park.

# Objective 3: Contribute to the achievement of other public interest objectives

Cultural heritage is an indivisible part of the Park; therefore, nature conservation public services facilitate and enhance the conditions for nature preservation, while the promotion of cultural heritage is a synergistic contribution to the promotion of the whole Park.

Protecting the salt pans against the impacts of the sea and inland waters or other compromising factors is necessary to preserve the salt pans. Although these tasks are carried out by the public water management service, the Park's operator can contribute to the timeliness and efficiency of measures by implementing the field management tasks.

The Sečovlje Salina is an anthropogenically created and maintained ecosystem; compared to the natural environment, it is more likely here that natural disasters occur (particularly in relation to climate change), as well as extreme environmental conditions caused by epidemic diseases of animals (e.g. risk of bird flue), or poisoning of animals (butulism) due to rotting caused by the lack of oxygen.

# Objective 4: Enabling the connection of the local population with the Park

Local residents living in the immediate vicinity of the Park have been traditionally linked with it, therefore, people must receive all key information about the Park, as well as the advice and assistance relating to the management of and around the Park. The Park contributes to enhancing the quality of life of the local population and sustainable development of the area. Provided the Park's objectives are not compromised, the local population must have the possibility to live in a harmonious coexistence with the Park.

# Identification Card of the Sečovlje Salina Nature Park

**Location:** The Park is situated in the extreme south-western part of Slovenia, on the border with Croatia, in the southern part of the Municipality of Piran.

Surface area: 700 ha

Settlements: 0

Population: 0

**Ownership:** Republic of Slovenia (in the vast majority), Municipality of Piran and private owners

**Operator:** SOLINE Pridelava soli, d.o.o. (salt-making company), on the basis of the concession granted for the management of the park.

# **Protection zones:**

According to Article 11 of the Decree, the Sečovlje Salina Nature Park has been divided into three protection zones:

*Protection zone I*: the area of primary protection where commercial activities are not allowed;

- *Protection zone II*: the area where, due to the protection of valuable natural features, traditional salt production is mandatory while other activities are carried out only if they do not interfere with the protection of natural values in the Park or the activities of traditional saltworks;
- Protection zone III: the area where, in addition to the protection of natural values, priority is also given to traditional land use and activities if they are carried out to the extent and in a manner that does not compromise the natural balance in the Park.

**Area of influence:** catchment areas of the Dragonja and Drnica Rivers, the Bay of Piran, the Seča Peninsula and the southern slope of the Savudrija Peninsula.

**Museum of Salt-making:** a cultural monument of national significance, situated inside the Park at Fontanigge; operator: Sergej Mašera Maritime Museum, Piran.

# LJUBLJANA MARSH NATURE PARK Barbara Zupanc

**Abstract:** On the doorstep of the Slovenian capital city, namely between the towns of Ljubljana, Vrhnika, Ig and Škofljica, a swampy plain extends for about 150 square kilometres, called the Ljubljana Marsh (in Slovene *Ljubljansko barje*). Since intensive farming is not possible due to the high groundwater level and regular flooding, the landscape quality has been preserved and, therefore, the Ljubljana Marsh has remained an endless mosaic of meadows, fern lands, fields, ditches and hedges. A blend of various habitats provides favourable living conditions for many plant and animal species which are only rarely found elsewhere in Slovenia and Europe. The Ljubljana Marsh has been classified as a site of Natura 2000, a network covering the most valuable and bio-diverse areas of the European Union. Not only nature, but also the cultural heritage is a valuable asset of the area, which is particularly well-known as a cradle of the prehistoric pile-dwelling culture. Perfectly preserved remains of pile dwellings were discovered in the wet marshy ground and, for that reason, a part of the Ljubljana Marsh has been included on the UNESCO World Heritage List since 2011.

The Government of the Republic of Slovenia declared a large part of the Ljubljana Marsh as a nature conservation area – the Ljubljana Marsh Nature Park – by decree in 2008. Since 2011, the Park has been managed by the Ljubljana Marsh Nature Park Public Institute. The basic purpose of the establishment of the Park, which extends to the areas of seven municipalities, has been to ensure the balance between nature protection, sustainable development of the area and the quality of life for its residents.

In the last decades the modern way of life has left deep wounds in the natural environment of the Ljubljana Marsh. Overgrown agricultural land, intensively cultivated fields and urban growth reduce the preservation of the natural environment and the quality of the living space. A decrease in the naturally preserved areas and biodiversity and the disappearance of certain species of plants and animals in the Ljubljana Marsh also affect the functioning of the natural processes on which it depends whether people will have enough water and food in the future. Moreover, the Ljubljana Marsh is an important water protection area and a source of drinking water for several communities. Preserved nature provides a range of opportunities for the production of good-quality and healthy food, sustainable farming and activities based on the potentials of the area, thus attracting visitors and promoting the development of tourism.

Keywords: Ljubljana Marsh, nature park, Natura 2000, UNESCO, sustainable development

#### **Information About the Protected Area**

The Ljubljana Marsh Nature Park covers the area of the Ljubljana Marsh (in Slovene *Ljubljansko barje*), situated in central Slovenia, in the southernmost part of the Ljubljana Basin. It extends from the Ljubljana Gate, a natural passage between the hills of Golovec, Grad and Šiška in the north and north-east, to the Polhov Gradec Hills in the north-west and west, to the Krim Hills and Menišija in the south, and to the Dolenjska Valleys in the south-east. The size of the area is 13,505 hectares or 135 km<sup>2</sup>.

From the administrative point of view, the Ljubljana Marsh Nature Park lies in the territories of seven municipalities: Brezovica, Borovnica, Ig, Log-Dragomer, Škofljica, Vrhnika and Ljubljana.

The Ljubljana Marsh Nature Park is the largest region of wet grasslands with a system of hedges, forests, scrubland and water areas in Slovenia. A high biodiversity has been preserved in the area due to the traditional method of cultivation (extensively mowed meadows). The survival of a large part of the protected, class animal, plant species and habitat types depends on the conservation of wetland ecosystems in the Ljubljana Marsh and the preservation of the extent of extensively cultivated meadows (modestly fertilised and mowed late in the season).

There are 22 settlements situated entirely or mostly within the Park territory, namely: Jezero, Notranje Gorice, Plešivica, Podplešivica, Vnanje Gorica, Žabnica, Brest, Iška Loka, Iška vas, Iška, Kremenica, Matena, Strahomer, Tomišelj, Vrbljene, Draga, Podkraj, Črna vas, Lipe, Bevke, Bistra and Blatna Brezovica. The settlements with only a small part in the Nature Park are Ljubljana along the Ižanska Road to the south of the bypass, parts of the villages of Podpeč, Verd, Sinja Gorica, Goričica, Prevalje and Kamnik pod Krimom, Log and Lukovica pri Brezovici, Dol and Breg pri Borovnici, and small parts of Pako, Gumnišče, Lavrica and Škofljica.

According to the data from the Central Population Register there were 11,946 people living within the boundaries of the Ljubljana Marsh Nature Park in 2011. Urban areas represent about 5% of the Ljubljana Marsh Nature Park territory, water areas (standing waters, ditches, channels, rivers and brooks) cover 1% and forest 9% of the territory. Agricultural land accounts for more than two thirds of the Park area, predominantly meadows (46%), followed by fields and gardens (31%). Most of the land (83%) is privately owned. About 12% of land is owned/co-owned by the State, 3% of the land is managed by the Fund of Agricultural Land and Forests, 0.7% of land is owned/co-owned by the municipalities, 0.6% is in the ownership or coownership of the Roman Catholic Church or local parishes and about 0.5% of the land is owned/co-owned by companies.
The Ljubljana Marsh Nature Park was established by the Decree on the Ljubljana Marsh Nature Park (Official Gazette of the Republic of Slovenia, No. 112/08) which entered into force on 12 December 2008. It was classified into the IUCN Protected Area Category V – Protected Landscape. The protection status can be categorised according to several types of protection: the wider protected area – landscape park (IUCN Category V), two ecologically important areas and the Nature 2000 site. According to the European Birds Directive, the Ljubljana Marsh Nature Park is a special protection area for 22 bird species. The Park is remarkable for a large number of valuable natural features (59), natural monuments (9), natural reserves (6) and the presence of various endangered and internationally protected wild animal (23) and plant species (1), their habitats and habitat types (7), as well as for numerous cultural values and a mosaic landscape pattern, which is a result of the long coexistence of man and nature.

- **Protection Area I** (44.5 km<sup>2</sup> or 33% of the area) is the most important nature protection category, primarily aimed at the protection and preservation of natural values, and at achieving a favourable status of plant and animal species, their habitats and accordingly adapted agricultural practices.
- **Protection Area II** (26.3 km<sup>2</sup> or 19% of the area) is also an important nature protection category intended for the protection of valuable natural features, biodiversity and landscape diversity, sustainable farming, sustainable and the least nature-intrusive exploitation of natural resources.
- **Protection Area III** (64.2 km<sup>2</sup> or 48% of the area) is intended primarily for the maintenance of landscape diversity and promotion of sustainable development.

Considering the international significance of the Ljubljana Marsh Nature Park there are two archaeological pile-dwelling sites which have been included on the UNESCO World Heritage List since 2011. In addition, there are five cultural monuments of national significance, two cultural monuments of local significance and 277 cultural heritage units within the Park area.

As regards the membership in international associations, it is planned that the Park will join a network of protected areas in Europe (Europarc Federation) and to include it on the list of Ramsar sites.

#### Management of the Protected Area

#### Establishment of the Ljubljana Marsh Nature Park

The Ljubljana Marsh Nature Park is an area of nature protection at the national level under the Decree on the Ljubljana Marsh Nature Park (Official Gazette of the Re-

PUBLIC ENTERPRISE, 2014, Vol. 20, Nos. 1 - 2

public of Slovenia, No. 112/08). The Ljubljana Marsh Nature Park Public Institute was set up by the Decision Establishing the Ljubljana Marsh Nature Park as a Public Institute, adopted by the Government of the Republic of Slovenia (Official Gazette of the Republic of Slovenia, No. 55/2009). The Institute started its operation on 1 September 2010.

The foundation for the establishment of the Ljubljana Marsh Nature Park was laid by the Agreement on the Establishment of the Ljubljana Marsh Nature Park in 2007, based on the amended Agreement on Participation in the Establishment of the Ljubljana Marsh Nature Park in 1998, signed by the municipalities in the Ljubljana Marsh area (Ljubljana, Brezovica, Vrhnika, Borovnica, Ig, and Škofljica) and the ministries for agriculture, environment and culture. The Agreement from 2007 provided the legal basis for the active participation of the Ministry for the Environment in the establishment project; it also clearly defined the competencies and responsibilities of institutions and set up the structure of management and financing of the Ljubljana Marsh Nature Park establishment project. Therefore, the idea of protecting the area originates from the local communities that early recognised the need for effective nature protection in the area of Ljubljana Marsh and also the advantages that such protection could offer in terms of quality living environment for the local population and new opportunities to create added value and jobs.

The local communities therefore financed the initial activities for the establishment of the Park and covered the costs of preparing the technical bases. However, it turned out that later financial, logistic and political support by the line ministry and a commitment to finalise the process of establishing the Park were the key elements in the final declaration of the protected area.

Technical bases (nature protection, cultural heritage protection and development of key activities) for the area's protection were prepared by spring 2008 and, in the summer of the same year, the text of the draft Decree on the Ljubljana Marsh Nature Park was harmonised both professionally and politically (expert and programme councils that acted on the basis of the above-mentioned Agreements). In accordance with the Nature Conservation Act (Official Gazette of the Republic of Slovenia, Nos. 96/04 and 61/06), the draft Decree was submitted to public consultation that lasted for two months and eleven public presentations were carried out in the settlements of the Ljubljana Marsh, which were attended by hundreds of locals. Public presentations included the draft Decree on the Ljubljana Marsh Nature Park, nature conservation bases and the advantages of establishing a landscape park.

In the following procedure, organisations and individuals made dozens of supplements and comments to the Decree on the Ljubljana Marsh Nature Park. In autumn 2008, a revised and harmonised wording of the Decree was submitted for discussion and adoption to the Government of Slovenia.

Since the Ljubljana Marsh is an area of valuable natural features and long-term coexistence of man and nature, a professional institution for nature conservation proposed a measure of protection in the form of a landscape park. Therefore, the establishment of the landscape park and its modes of operation do not only imply realising the conservation of species and their habitats, but also an active involvement of the local population, local communities, interest groups and economic entities in all planning and management activities within the protected area.

According to the Decree, the purposes of the Ljubljana Marsh Nature Park are to protect the natural values, preserve biodiversity and landscape diversity, as well as integrate the economic and social development, preserve and promote the cultural heritage in the area. The Decree defines the Park's area, protected areas and core protected areas in the Ljubljana Marsh Nature Park, the rules of conduct and protection regimes, management and control methods in the Park, and other practices in relation to the establishment of the Ljubljana Marsh Nature Park.

## Ljubljana Marsh Nature Park Public Institute

According to the Decree on the Ljubljana Marsh Nature Park and the Decision Establishing the Ljubljana Marsh Nature Park as a Public Institute, the protected area is managed by the Ljubljana Marsh Nature Park Public Institute which primarily performs the following nature conservation tasks:

- 1. concern for the land-use preservation and regulation, and implementation of spatial interventions and activities for the protection of valuable natural features and preservation of biodiversity and landscape diversity
- 2. preserving and creating the spatial conditions to achieve a favourable status of plant and animal species
- 3. maintaining the typical mosaic landscape pattern of the Park
- 4. guiding the maintenance of the drainage ditches network
- 5. preventing the spread of non-native, especially invasive plant and animal species
- 6. implementation of measures for the protection of plant and animal species, their habitats and habitat types
- 7. performing other tasks that protect valuable natural features and preserve biodiversity and landscape diversity in line with the management plan.

The Decision also defines the further tasks of the Ljubljana Marsh Nature Park Public Institute as the Park's manager related to the public service of nature conservation, which are, *inter alia*, to cooperate with local communities within the Park; monitor and analyse the status of valuable natural features, biodiversity, landscape diversity and the environment in the Nature Park; cooperate with administrative authorities, inspection services, non-governmental organisations, land owners and tenants; concern for the presentation, education and public awareness of the Park; planning, construction and maintenance of the Park's infrastructure; guiding of visitors through the Park and similar.

The supervision of the public service implementation is performed by the Council of the Ljubljana Marsh Nature Park Public Institute consisting of 15 members: four representatives of the founders (representatives of the ministries responsible for culture, agriculture, nature conservation and regional development), seven representatives of the local communities within the Park, one representative of land owners, two representatives of non-governmental organisations and a representative of the Park's employees. The Council has a four-year mandate. Its responsibilities include the adoption of annual work programmes, reporting on the activities and financial operations, and control over the management and operations of the Institute. In this way it is ensured that local communities and other interested organisations, institutions and individuals have a direct influence on the Park's operation.

The Expert Council of the Institute deals with the professional issues of the Park's operation and gives opinions, suggestions and proposals to address these issues. The Expert Council consists of the Chairman, professional staff of the Park and external experts.

The Public Institute operates on the basis of annual programmes and financial plans approved by the founder (Government of the Republic of Slovenia) and, therefore, also verified and approved by the line ministries. Similarly, the Public Institute prepares annual and half-yearly reports on the implementation of the work programme, including the financial report.

In accordance with the Decree on the Ljubljana Marsh Nature Park, the park's administration is required to prepare a ten-year management plan. In particular, the purpose of the management plan is to assess the situation, define the operational objectives and measures to achieve the objectives, and to determine the management priorities in relation to the financial and human resources. Moreover, it identifies the opportunities of and risks to the protected area and defines the ways to achieve the environmental and developmental goals. It also serves as a basis for the preparation of annual work programmes, adopted by the Council and approved by the Government of the Republic of Slovenia. In the first half of 2013 the management plan of the Ljubljana Marsh Nature Park was in the process of coordination with individual stakeholders, while the final version was expected by the end of 2013.

## Funding of the Public Institute

The Ljubljana Marsh Nature Park Public Institute obtains funding for the management of the protected area mainly from the state budget, mostly under the budget line for nature conservation and a smaller part under the budget line for cultural heritage protection. Additional funding is obtained from municipal budgets (non-systemic) and from national and international funding programmes on the basis of approved projects. The Park also makes some income from its services, e.g. guiding the visitors, but the revenue does not exceed a few percents of the annual budget. Since the Park's employees carry out the nature conservation, professional, supervisory and management tasks within the context of a public service their salaries are fully covered from public funds.

The Park's funds, intended to cover the salaries, the material and programming costs, are modest and are further diminishing due to the reduction in public spending. In the first year of operation (2011) EUR 215,000 were earmarked in the state budget for the operation of the Park, while the amount fell to only EUR 163,000 in 2013. Limited resources dictate a clear definition of the public service priorities, and consequently the allocation of work tasks and the available resources in line with the priorities. The priorities set for 2013 were as follows:

- Priority 1: protection and management tasks (drafting of the management plan, protection of species, habitat types, ecosystems and Natura 2000 sites, nature protection supervision and conservation of the most sensitive natural values)
- Priority 2: visit management and awareness-raising tasks (formulation and implementation of visit programmes, information and promotion activities, information material, educational paths, lectures and exhibitions)
- Priority 3: development tasks (promotion of the sustainable use of natural resources, trademark development, cooperation with local communities and the population).

The Park can also obtain funds from international tenders, in particular various programmes of the European Union (cohesion policy, interregional and intergovernmental cooperation, rural development, Natura 2000, etc.). However, since the Park was established at the time of the termination of the EU Financial Perspective 2007-2013, the availability of those resources (taking into consideration the lengthy procedures for the approval of the selected projects) was very limited for

the Ljubljana Marsh Nature Park. The Park participates in a small number of projects but their results are nevertheless very important for the Ljubljana Marsh area.

## Staff of the Nature Park

From the start of its operation, the Ljubljana Marsh Nature Park Public Institute employs three permanent staff (director, higher nature conservation adviser and business secretary) which is insufficient for the effective implementation of managerial tasks. Despite the fact that the Park's job specification rules provide for 14 employees, the current economic and financial crisis and the resulting austerity measures in the public sector do not allow for an increase in the number of employees. Since the austerity measures also restrict other forms of employment (contract work, copyrighted work, student work, etc.), additional labour may be hired for particular and time-limited activities only exceptionally and with the consent of the founder (Government of the Republic of Slovenia).

## The Nature of the Ljubljana Marsh

## Landscape Diversity

Diverse spatial incidence of landscape patters and elements creates a mosaic landscape which supports the preservation of many habitats and, consequently, a greater abundance of plant and animal species and a higher level of biodiversity.

The landscape image of the Ljubljana Marsh is characterised by a broad plain with some isolated hills rising from it. The image is complemented by a network of water bodies which defines the geometric structure of the landscape, small plots of land and spatial incidence of shrub and tree hedges. The scenery is also complemented by hilly edges that surround the plain. Particularly distinctive is the southern edge, spatially dominated by the Krim Mountain. There is also a number of smaller spatial dominants, often accentuated by church towers. The landscape elements are distributed in a mosaic pattern.

Land allotment strongly influenced the formation of the Ljubljana Marsh mosaic landscape – long and narrow parcels, mostly positioned perpendicular to the nearby watercourse, which ensured the same quality of land in the allotment of parcels, and tree hedges that once separated the land of individual owners. The third important element is the water drainage system – a network of artificial drainage ditches criss-crossing the farmland. In addition to the above three elements, farming practices have also contributed to the characteristic appearance of the landscape.

In recent times, the changes in the value and appearance of the Ljubljana Marsh landscape result both from the reduction and from the intensification of agricultural activities. Landscape diversity reduces due to the abandonment of agricultural activities and tillage which leads to overgrowing of the land and intensification of agricultural production through the expansion of monocultures.

In the Ljubljana Marsh the most common habitat types are various grasslands which can, with a reasonable management, provide a living environment to many bird species and butterflies. Forests are overgrowing some small areas, scattered throughout the Ljubljana Marsh. Swamp forest associations consist of pedunculate oak-hornbeam forests and alder forests; some of them have developed from alder groves. These associations provide the habitat to some endangered forest species (Eurasian woodcock, black stork, yellow-spotted emerald and agile frog). Solitary hills are mostly covered by fir and beech forests. Another important habitat at the Ljubljana Marsh are watercourses: rivers, brooks and artificial drainage ditches. Large channels are generally overgrown with woody vegetation and their water flows into natural watercourses. Today, drainage ditches to some extent functionally replace the former marshes and bog pools, thus representing a secondary water-associated habitat type. Tall herbs grow by the water, but may also occur on some meadows after the abandonment of mowing.

Habitat types of nature conservation importance cover a quarter of the Ljubljana Marsh Nature Park area. The most important habitat types are black alder forests along running waters, swamp black alder forests, wet meadows with purple moor grass, wet meadows with purple moor grass and fen species, natural and quasi-natural raised bogs, fens with Davall's sedge, fens with Davall's sedge overgrown with alder, floodplain pedunculate oak-hornbeam forests, streams with predominantly natural banks, rivers, stands of high sedges, reed stands and similar associations.

There are 19 habitat types in the Ljubljana Marsh Nature Park area which are protected under the Decree on Habitat Types (Official Gazette of the Republic of Slovenia, Nos. 113/03 and 36/09). Moreover, there are seven habitat types in the Nature Park area that qualify for Natura 2000 sites under the Habitats Directive. Together, such habitats cover 45.5% of the Park's area.

The greatest threats leading to the deterioration of habitat types and their loss are overgrowing, intensification of farming (soil fertilisation, early and repeated mowing, baling, and draining), colonisation and the growing presence of non-native species. Lately, filling of agricultural land, especially with building material, has become an ever bigger problem. In the last ten years the share of habitat type areas with a high nature conservation value has decreased by 13%, primarily due to an increase in agricultural land under intensive cultivation (fields, abandoned fields and intensively cultivated meadows). The extent of habitat types bound to watercourses is also decreasing because they are threatened by water pollution and water management interventions that alter the channel structure of watercourses, thus affecting the ecological conditions. Various forms of recreation also have an impact on the habitat types.

Fens are threatened by changes in the water regime which result from natural processes (natural succession and associated overgrowing with reed, high herbs and swamp alder forest), human interventions in the water regime (agricultural hydraulics, water storage and urban growth) and the intensification of farming (soil fertilisation, repeated mowing and use of heavy machinery).

## Flora and Fauna

Due to the proximity of Ljubljana, the Ljubljana Marsh is one of the well-researched botanical areas in Slovenia. Different types of grasslands are the most widely spread habitats in the Ljubljana Marsh, covering two thirds of the Ljubljana Marsh Nature Park area. If left to natural succession, the Ljubljana Marsh would eventually revert to woodland; however, regular mowing prevents overgrowing with woody species. Sphagnum moss bogs are preserved only on a few fragments of thick peat substrates where peat has not been completely cut and burned. Water channels and ditches also provide an important habitat for a number of aquatic and marsh species. Forest prevails on the non-built-up solitary hills, while there are only small forested areas on the marshy plain, occurring only on the remains of thick peat land and on alluvial deposits in the northern part of the Ljubljana Marsh. Also typical is the occurrence of woody species in the form of scattered shrubs, small groups of trees and hedges. Although hedges are not an important habitat of rare plants, they are of great importance because they interrupt the monotony of the cultural landscape and provide shelter to many animal species.

A blend of different habitat types in the Ljubljana Marsh provides a living environment to a number of animal species. There are several rare and endangered animal species present in the Ljubljana Marsh Nature Park whose populations are also important on a European scale. Within the Natura 2000 network populations of three amphibian species, two species of dragonflies, three mollusc species, four species of butterflies, a reptile species, two mammal species, eight fish and lamprey species, and 22 bird species exist in the area of the Ljubljana Marsh Nature Park. The area is an important habitat for some other endangered species in Slovenia which are included on the Red List of endangered plant and animal species. Flora and fauna depend largely on the farming practices, namely on the soil fertilisation regime, mowing times and eventual land reclamation (drainage). The areas of extensive, meagrely fertilised and late-mown meadows are reducing in size. Wet grassland plants are disappearing due to drainage and intensive fertilisation causes changes in the grassland species composition, because typical wet meadow species thrive on nutrient-poor sites, while other plants benefit from the richly-fertilised soil. Repeated mowing during the season and baling cause the disappearance of species since many plants cannot drop seeds.

In addition to several centuries of drainage, conversion to agricultural and urban land and environmental pollution, the vegetation of the Ljubljana Marsh is now also threatened by non-native invasive species. There are 24 non-native species registered in the area; the two most common ones are the Canadian goldenrod, which occurs in closed belts of dense stands, and Japanese knotweed whose stands are scattered throughout the Nature Park.

The Ljubljana Marsh is one of the most important ornithological areas in Slovenia; although it represents less than 1% of the Slovenian territory, many a species has more than 20% of its population here due to the existence of diverse habitats. Between 1976 and 2002, 258 bird species were observed in the Ljubljana Marsh, of which 102 breeding bird species, 52 bird species wintering here regularly and 47 periodically. 72 bird species were identified during spring and autumn passages. The Ljubljana Marsh is a special protection area for 22 bird species, 65 species are included on the Red List of endangered species in Slovenia and 13 bird species are of national importance.

Extensive wet meadows, floodplain forests and scrubland are the most important habitats for birds in the Ljubljana Marsh. The number of birds is decreasing due to unsuitable times and intensity of meadow mowing, soil fertilisation, drainage, overgrowth and turning the meadows into fields. Destruction and inappropriate maintenance of hedges, which are an important birds' habitat, also reduces the bird population. Moreover, birds are threatened by hunting and increased use of chemicals that impoverish the soil fauna.

#### Cultural Heritage of the Ljubljana Marsh

The common story of man and the marshes began in the Old Stone Age when the first hunters and gatherers came to the area. Until the first permanent settlements appeared in the Neolithic period, people sought shelter in caves on the outskirts of the marsh and in suitable locations in the open air, usually near water and other essential survival resources. In the inter-glacial period, the runoff from the Ljubljana

Marsh was blocked which caused the creation of a lake. Water attracted both animals and humans hunting them, as evidenced by finds from the Palaeolithic period at Hruševca near Vrhnika, Kamna Gorica and in the clay pits area at Sinja Gorica. In 2008, a very interesting wooden pointed object was found during the archaeological survey of the Ljubljanica River bed. Subsequent scientific studies revealed that it was a 40 thousand years old spike, most probably a spearhead. It was made of yew, the best type of wood for making the wooden parts of hunting gear. According to information currently available, it was the first such discovery in the world, now displayed by the Museum and Galleries of Ljubljana.

The first permanent settlers in the Liubliana Marsh built their houses on piles approximately 6,600 years ago, so they were called pile dwellers. People erected pile dwellings on the shores of the lake intermittently for about 3,000 years. Because of the constant wetting of the soil many traces of the ancient settlers have been preserved. To date, the remains of about 40 pile-dwelling villages have been discovered. According to the archaeologists the average pile-dwelling consisted of less than twenty huts. Some pile-dwelling villages were continuously inhabited for up to a hundred years, but most of them for much shorter periods. The lake and the wealth of animal life offered good hunting and fishing to the original marsh-dwellers who perfectly knew and respected nature. They manufactured wonderful ceramics. Imported objects and raw materials prove that already in those times people were travelling large distances. The pile dwellers of the Ljubljana Marsh were connected with communities hundreds of miles away in Pannonia, northern Italy and in the Alps, where almost a thousand similar settlements have been discovered until today. Later, they used carts on land. In 2002, a group of archaeologists discovered a part of a carriage or pushcart, namely the remains of a wooden wheel with the axle, a remarkable archaeological discovery since the about 5,150 years old wheel is the oldest wooden undercarriage ever found in the world. Important innovations, such as the invention of the wheel and cart or the beginnings of copper and later bronze metallurgy, interestingly reveal the wealth of prehistoric cultures in the Alpine area. Pile dwellings are a characteristic phenomenon of the prehistoric time in the Alpine lake and wetland areas. About a thousand settlements were discovered in the area stretching north and south of the Alps, from eastern France, Switzerland, southern Germany and northern Italy to Slovenia. Namely, the very locations that remained saturated with water up to now allowed the preservation of this exceptional heritage. The remains of wooden houses, tools and other utility items, food and even clothing are valuable sources of studying the life of people who did not leave written sources. With some interruptions, the people of Ljubliana Marsh persisted in their pile dwellings for as long as 2,500 years. The oldest pile dwellings date back to 4500 BC.

Since the discovery of the first pile dwellings in 1875, the Ljubljana Marsh has become synonymous with the prehistoric pile-dwelling villages, an archaeological phenomenon that only about 20 years after the discovery of the first pile dwellings in Switzerland also marked the Slovenian region, exciting both laymen and experts and inspiring artists. Pile-dwelling settlements are perfectly preserved and represent a unique archaeological resource and valuable cultural heritage of global significance. Therefore, 111 prehistoric pile dwellings from six countries in the Alpine region (Slovenia, Switzerland, France, Germany, Austria and Italy) were put on the UNESCO List of World Heritage Sites, among them two groups of pile dwellings in the surroundings of Ig in Slovenia.

In the late Bronze Age, about 3,000 years ago, people moved from pile dwellings to the solid ground on the outskirts of the Ljubljana Marsh. Later on, fortified settlements were constructed on hilltops. At that time, the central parts of the marshy plain gained the characteristics of a ritual landscape or cult places where warriors, traders and travellers performed sacrifices. Life at the forts ceased at the time of the Roman conquest of the area.

The Romans established two large settlements, Emona and Nauportus, at the edges of the Ljubljana Marsh. More than 120 Roman funerary monuments discovered in the surroundings of Ig prove the existence of an important Roman settlement. The main traffic route of the Romans across the marshy plain was the Ljubljanica River, fact proven by the remnants of two large Roman cargo ships and a number of boating tools and choppers used to cut the vegetation along the banks.

Another unique cultural heritage of the Ljubljana Marsh is the Southern Railway which was built to connect Vienna and Trieste in the forties of the XIX<sup>th</sup> century. The construction of the railway on a very low static load carrying and extremely soft ground presented a great challenge. Huge amounts of rocks from the nearby quarries were needed to build the railway embankment.

Jože Plečnik, a Slovenian architect, knew the Ljubljana Marsh very well because he lived not far away, at Trnovo in Ljubljana. His particular interest in the marshy world was aroused when he received an order to build a church at Črna vas. Despite a particularly demanding construction due to the soft ground, he, as always, undertook the work meticulously and thoughtfully. It seems today as if the magnificent Saint Michael's Church rose from the marshy soil.

#### Social and Economic Aspects of the Protected Area

In 2011 the population of the Ljubljana Marsh Nature Park area amounted to 11,946 people. The population of the Park is growing. The demographic analysis (Oven 2012) showed that the number of inhabitants is increasing mainly on account of net migration (60% growth). A relatively high population growth rate is also due to natural increase since mainly young and middle generations of childbearing age immigrate to the area.

A large volume of immigration to the Park is also reflected in the ratio between immigrants and locals. In 2002 immigrants accounted for more than half of all inhabitants which already presents a problem in certain places. Through centuries, the local population has learned to live in harmony with nature, while immigrants often lack this feeling and they perceive the natural resources just as an unlimited source of income. Large immigration may also present a threat to the identity of the local population. However, migrations have a positive effect on the age and educational structure of the population, but also cause a large number of commuters and hence increased traffic in the direction of urban centres, in particular the nearby capital city.

In addition to Ljubljana, public transport is relatively well-organised in the municipalities of Brezovica, Ig and Škofljica where urban passenger transport lines have been recently extended to the settlements of Iška vas, Jezero and Notranje Gorice. There is also the Ljubljana-Sežana railway line crossing the Ljubljana Marsh. Despite the improvement in the availability of public transport, most people use cars and thereby contribute to the increase in greenhouse gas emissions. Traffic problems also arise from the fact that the population increased significantly in the last decades, which resulted in traffic congestions on the main roads to Ljubljana.

In the area of the Ljubljana Marsh Nature Park there are registered about 1,000 companies (AJPES, February 2012), mostly micro businesses employing less than ten persons, with net sales revenues not exceeding EUR 2,000,000.

In 2012, there were twenty complementary activities registered at the farms in the area. The most common complementary activities are street and other cleaning and electricity production, followed by manufacturing (bakery and cheese making). The Ljubljana Marsh Nature Park with its various natural and cultural features has not yet been recognised as an attractive tourist destination which is also proved by the fact that only one farm engages in rural tourism and accommodation services in the context of complementary activities. Traditional crafts and trades are being increasingly abandoned.

Agriculture is a key activity in the Park, shaping the landscape and helping create the conditions for its high biodiversity over the millennia. Due to the high proportion

of agricultural land within the Park, farming is of great importance both from the economic and social points of view. According to the data on actual agricultural land use in 2011, agricultural land covers over 75% of the Park's territory, of which 60% of grassland and 40% of arable land.

The main cultivation activity is livestock farming, namely cattle breeding, with the largest number of farms engaged in less intensive forms (suckler cows, pasture breeding, sheep and goat rearing). The structure of crop production corresponds to the main cultivation activity (livestock farming), since more than half of the farms are engaged in crop production, mostly maize and other forage plants.

Agriculture is of great significance for the preservation of extensive meadows, grassland species and landscape in the Ljubljana Marsh Nature Park. Extensive use of agricultural land, a large proportion of grassland and land and property fragmentation have created a richly structured habitat for specific and rare animal and plant species. Abandonment of agricultural production leads to the overgrowing of land and thus the loss of traditional landscape features, whereas the intensification of agricultural production threatens the existence of some rare, endangered plant and animal species, and reduces the area's biodiversity. Any agricultural activities on peatland may threaten its conservation status.

## **SWOT Analysis and Prospects**

In the area of the Ljubljana Marsh Nature Park, the particularly high degree of nature conservation, reflected in a large number of different habitat types, valuable natural features and rich landscape diversity, has been identified as an advantage. Due to its natural and cultural values, the Ljubljana Marsh is classified in and crisscrossed by various protected areas and regimes (nature park, Natura 2000 site, water protection area, etc.), which enables an easier, integrated and systemic management. Other positive elements are its rich cultural heritage, archaeological remains and the inclusion of the pile-dwelling locations at Ig on the UNESCO World Cultural Heritage List.

The Ljubljana Marsh area has a favourable demographic structure, reflected in its young and educated population. The Park's administration estimates that the inhabitants have a sufficiently positive attitude towards the Nature Park. However, the owners of agricultural land, especially those for whom agriculture is a principal activity, have a slightly negative attitude because of their fear of the agricultural activities restriction. The support to the Ljubljana Marsh Nature Park also shows through a good relationship with various stakeholders and cooperation with two LEADER approach local action groups that operate in the area of the Ljubljana Marsh. Opportunities and potentials for achieving the objectives of the Ljubljana Marsh Nature Park and sustainable development of the area arise particularly from investing into people and stakeholders who work in or in association with the area. In order to exploit the existing potentials, investments will be required in the areas of awareness raising, education and counselling. In the future the Ljubljana Marsh Nature Park may become an important connecting link and a promoter of sustainable development in the area, for which all available resources will have to be exploited, including the EU funds. The Ljubljana Marsh is also globally important because, in addition to the UNESCO Heritage, it is envisaged to be classified as a Ramsar wetland, the Podpeč quarry is proposed to join the European Geoparks Network, and the Park is actively involved in the achievement of the Convention on Biological Diversity. The stated landmarks and other valuable features in the Ljubljana Marsh Nature Park should be made recognisable and accessible to visitors within the context of nature tourism, including outdoor classrooms (educational paths, interpretative centres, etc.).

To achieve the aims and development goals of the area it is also essential to ensure the functioning of agriculture, which is the most important activity in the Ljubljana Marsh Nature Park, particularly in terms of land management. Opportunities for the development of sustainable forms of farming lie in the reform of the European Common Agricultural Policy which provides for the integration of green components and a greater emphasis on environmental issues, including the ecosystem services. Moreover, there are possibilities for the development of complementary activities at the farms and value adding to the agricultural and non-agricultural products through laying emphasis on and promoting sustainable production together with trademark using.

Another advantage is the proximity of the capital city of Ljubljana, providing infrastructural accessibility, closeness to a large market, opportunities of cooperation with various institutions and other benefits. However, the proximity of a large city may also have negative effects, especially through the increased pressure on the environment and its exploitation for different purposes (expansion of built-up areas, unsuitable forms of tourism and recreation, waste disposal, etc.).

Other negative processes have been detected in the area, such as the improper maintenance of typical landscape structures and elements (hedges, channels) and intensification of agricultural activities resulting in the changes of agricultural land use and, in particular, in a decrease in grassland areas. However, the abandonment of agricultural activities leads to uncultivated and overgrown farmland (often by invasive alien species) which is not desirable in terms of habitat and landscape diversity conservation. From the social and administrative points of view, problems arise mainly from the inobservance of regulations, lack of capacities and poor responsiveness of competent institutions, associated with ineffective monitoring of the situation and under-financing. In the Ljubljana Marsh Nature Park, nature conservation and cultural heritage protection are performed simultaneously; however, funding is not regulated in a systematic manner as the two sectors are organisationally and legislatively separated.

Other problems observed in the Nature Park are the absence of regulated nature protection supervision and targeted agri-environmental consultancy (on the basis of individual management plans), low social and political commitment to nature conservation and ignorance and lack of awareness about the importance of the area, while also bearing in mind the negative effects and feelings created by the current social and economic crisis.

In the future, most attention should be paid to threats resulting from inadequate management of the space, land and other structures that lead to further deterioration and reduction in habitats for plants and animals, lesser areas of high natural value and lower landscape diversity, and thus the loss of traditional cultural landscape. In the worst case scenario, the result of the above-stated will be the loss of the area's identity. Moreover, inadequate agricultural production, unreasonable land use and spatial planning, unadjusted architecture and improper water management also largely contribute to the unfavourable situation. In the field of water management it is necessary to call attention to the risk of flooding and flood protection measures, and the probability of inadequate water management interventions that may result in undesirable changes in the water regime. In recent times, climate changes represent a new threat. Due to the strategic position of the Ljubliana Marsh, the area is exposed to various spatial interventions for the purposes of setting up infrastructure facilities (landfill, bypass, etc.) which may strongly affect the favourable status of plant and animal species and their habitats and the achievement of the objectives laid down in the Decree on the Ljubljana Marsh Nature Park.

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# THE SIGNIFICANCE AND DEVELOPMENT OF THE TRIGLAV NATIONAL PARK AND ITS IMPLICATIONS FOR SLOVENIA Martin Šolar

**Abstract:** The paper deals with the role and content of protected areas, with special emphasis on national parks. The aims and objectives of protected areas also apply to the only national park in Slovenia – the Triglav National Park. The significance, development and implications of the Triglav National Park in the Slovenian context are illustrated through the Park's history from the first initiatives over a hundred years ago to the present time when the Park reaches the age of Christ (legally proclaimed in 1981). The paper focuses on the presentation of the Triglav National Park's management objectives in the light of the new Triglav National Park Act, adopted in 2010, and in the context of the current economic crisis.

Keywords: national park, Triglav National Park, management objectives, new Triglav National Park Act

## Introduction

What is a national park? What are the management tasks in the park and what are the operators expected to do? Although the answers to these questions may be simple at first sight, they are unfulfilling without a professional explanation of the aims and purposes of a national park.

The same is true with regard to the role, purpose and objectives of the Triglav National Park, which has been, one way or another and with a greater or lesser role, a fact in Slovenia for a hundred years, from the first initiatives and the first protection measures to the present large, modern-managed protected area, with a great impact on the nature conservation and sustainable development in the Julian Alps region.

## What is a National Park?

Various types of protected areas have been established throughout the world and their designations are not uniform. The most common forms and designations are nature reserves, forest reserves, natural monuments, national monuments, national parks, regional parks, landscape parks, protected landscapes and wilderness areas. Considering the nature conservation importance and national significance, national parks are those protected areas where the public is most directly involved in nature conservation and protection issues.

Below are some thoughts, descriptions and definitions of a national park by different authors.

When the idea of the establishment of national parks came to life in North America at the end of the XIX<sup>th</sup> century, its intention was to protect and preserve certain areas in their natural state. A natural state implies an unspoiled landscape free of human influence. We are aware today that the preservation of landscape in a completely natural state is practically impossible; therefore, the aim of national parks management and protection is to maintain them in a near-natural state (Larsson 1993). This may be further clarified by stating that a completely natural state can be exceptionally maintained only in strict nature reserves.

National parks are nature conservation areas put under direct protection in order to preserve some parts of nature in the general public interest. These are integral areas with a high level of protection and several purposes: scientific, educational and cultural (Vidaković 1997).

In Europe, national parks represent a large range of natural landscape types. They are generally highly valued and millions of people are searching for nature experience, education and recreation in such parks. National parks are a widely recognised and accepted instrument for the protection of pristine nature, contributing significantly to the protection of the European natural heritage (Guethler et al. 1998). The situation is similar elsewhere in the developed world, especially in the United States and Canada.

Hans Bibelriether, one of the most prestigious European experts in nature conservation, believes that national parks are the most important category of protected areas which ensures the protection of nature not only in individual countries but in the whole Europe and the world. In national parks, nature is protected in a much broader sense than just protecting the attractive plant and animal species; therefore, the entire diversity of life and the natural processes of biotic communities and ecosystems are supported in national parks. The main objectives of national parks are set out in the "Guidelines for Applying Protected Area Management Categories" of the International Union for Conservation of Nature (IUCN). According to the Guidelines, national parks are established to safeguard biotic communities and support their undisturbed natural development, free of human influences in terms of management, use and exploitation of these areas, thus ensuring the continuation of millions of years of evolution. The natural development of ecosystems is sometimes accompanied by extraordinary, even horrifying events – landslides, torrents and storms, and the consequential mass reproduction of insects in forests. The principle that applies in national parks is "let nature be nature". The mission of national parks

is also to offer the people, interested in and enthusiastic about anything natural, the opportunity to experience pristine nature, wilderness and the diversity and uniqueness of natural phenomena (Bibelriether 2001). The above thoughts and views on the national park concepts are modern and most useful for their current management practices.

Since a short definition of the IUCN Category II - National Park defines national parks as protected areas intended mainly for ecosystem protection and recreation, the term "national park" is closely related to the nature-based tourism (Eagles 2001). However, this very general definition points to the relationship between nature conservation and recreation, which may be detrimental to the basic nature conservation objectives. The term "national park" was much more sensibly defined by the authors of the "Guidelines: Development of National Parks and Protected Areas for Tourism" who described the concept of a national park as a natural area with specific internationally recognised protection standards where a certain level of visiting and tourism is permitted (McNeely et al. 1992).

The Slovenian authors also vary in their concepts and definitions of a national park. In the spirit of the times, Angela Piskernik (1962), a leading Slovenian nature protectionist, wrote that national parks are not an end in themselves, but serve the science and offer working men learning opportunities and rest. Islands of peace, recreational and national parks are created for people to relax in beautiful, well-kept nature to regain physical and mental strength for future endeavours.

At the time of inception of the Triglav National Park, two concepts confronted each other, namely an explicitly nature conservation concept and a more tourism and environment oriented one. Today, the Park's regulation is based on economical management, but with restrictions in the core part to ensure the preservation of valuable natural features. Taking into account land ownership rights and permissible environmental loads, agricultural, forestry, sustainable tourism and recreation activities are allowed in the outer zone of the national park (Lah 2001).

Historically, perhaps two basic motivations have always existed for those who wanted to protect particular parts of nature, namely the exceptional landscape features and the threats from human activities. Hence the common basic goal of protected areas worldwide is primarily the protection of nature as well as the preservation of the outstanding natural and cultural values of national and international significance, while in sparsely populated areas, the goal may also be to provide appropriate opportunities for the development of settlements and the survival of the local population (Lukan Klavžer and Šolar 1996).

In addition to laws, conventions, standards, guidelines and instructions, there are also unwritten general principles recognised in the world about what a national park is and should be. Such principles were underlying the creation of the first national parks in the last century and until the Second World War. When the first parks were established in America and Europe and when the idea of the Triglav National Park was realised in 1924 and later expanded in 1961, there were no laws or conventions on national parks. The founders merely observed the principles and had a great desire to implement them. According to the unwritten principles, a national park is an area of exceptional beauty and values of national and international significance, an area dedicated to the preservation of nature and its beauties by leaving it as it is, making no changes and not exploiting the natural resources, enabling just visiting and the experience of unspoiled nature by foot, avoiding noisy and otherwise disturbing transport (Bizjak 2001).

## History of the Triglav National Park Development

In August 1908, a small group of men walked through a part of the Triglav Lakes Valley (in Slovene *Dolina Triglavskih jezer*) from the Black Lake (in Sl. *Črno jezero*) and past the White Rock (in Sl. *Bela skala*) to the Lopučnica Highland (in Sl. *Planina Lopučnica*). However, they were not ordinary tourists (as the mountaineers used to be called at the time), but the official participants in a tour organised by the State Forest Management Authority to Radoviljica, on the initiative of the seismologist and natural scientist Prof. Albin Belar who proposed to set up a nature conservation park above Komarča. However, his proposal did not materialise because there was no legal basis for declaring the park. Moreover, the then legislation did not allow for the restriction of grazing. And this is how it all started. The men who participated in the tour *ex officio* or out of personal inclination were probably not aware that they turned a new and very important page in the nature conservation efforts, and even less could they know that the issue they had tackled would continue to trouble the Slovenian public for many a decade (Peterlin 1974).

Since the first European national park was established in Sweden in 1909 (Peterlin 1974), the Slovenians missed the opportunity to have the first national park in Europe due to the non-materialised idea of Prof. Belar.

The First World War caused a gap in the movement for the protection of nature. However, the old plans were brought to life even stronger immediately after the War. In 1920, the Department of Nature and Natural Monuments Conservation at the Slovenian Museum Association submitted a notable memorandum to the Provincial Government of Slovenia, memorandum whose principal request was to establish nature conservation parks, following the example of other countries. Among several proposals, there was for the first time a clearly specified plan for the establishment of a park in the Triglav Lakes Valley (Peterlin 1974).

In 1924, the Section for Nature and Natural Sites Conservation at the Slovenian Mountaineering Society succeeded – unfortunately only conditionally for a period of twenty years – to declare the Triglav Lakes Valley an "Alpine Conservation Park" and thus put the area under protection. The Park covered the area of about 1,400 ha (Piskernik 1962). Both initiators signed a leasing contract with the management authority, the Forests Directorate in Ljubljana.

The name "Triglav National Park" was first used in 1926. The merit goes to Prof. Fran Jesenko who was among the most committed supporters and activists in the realisation of the idea to establish a park in the Triglav Lakes Valley. On 30 May 1926, Professor Fran Jesenko described, in the daily newspaper "Jutro", the details about the establishment, importance and valuable features of the area, which he proudly named "Triglav National Park" (Petkovšek 1974).

Although the initiators hoped for an extension of the 20-year leasing contract, it expired on 1 July 1944. After the Second World War, everything had to be started from scratch. In 1947, the Department of Nature Conservation at the Institute for the Protection of Cultural Heritage of Slovenia submitted an application for the reestablishment of the Alpine Conservation Park (Piskernik 1962). Continuous efforts to re-establish the Park were hindered for more than ten years primarily by the interests of the owners of pastures, as well as the ambiguity in the jurisdiction over the Park's proclamation. The Alpine Association of Slovenia, which proposed to extend the Park's area, played an important role throughout that period. The adoption of a special law on national parks (1959) provided a legal basis for the declaration of the Triglav National Park. On a proposal of the Institute for the Protection of Cultural Heritage, a special Republic commission proposed to put under protection the Triglav Lakes Valley, including Komarča and the Savica Waterfall, and to extend the Park's area to the upper part of the valley to Vršac, Hribarice, Mišeljski konec and Vršaki. The proposed area covered about 2,000 ha.

On 26 June 1961, the Assembly of the People's Republic of Slovenia adopted a Decree declaring the Valley of Seven Lakes a National Park under the name Triglav National Park (Piskernik 1962).

The re-establishment and enactment of the "little" Triglav National Park in 1961 was a necessary step towards the real goal – a large park in the Julian Alps which has lived in the minds of many Slovenians for decades. In the sixties and seventies of the XX<sup>th</sup> century, extensive analyses were carried out and comprehensive plans and proposals prepared, with the participation of many institutions and experts, for the expansion

of the Park. Let us mention in particular the then Institutes of the Socialist Republic of Slovenia for the Protection of Natural and Cultural Heritage and for Regional Spatial Planning, while Dr. Miha Potočnik stood out among individuals. The draft law on the Triglav National Park was discussed already in 1978; the supplemented and amended law was adopted as the Triglav National Park Act of the Assembly of the Socialist Republic of Slovenia on 27 May 1981.

In its present form, the Triglav National Park existed for more than thirty years, but in 2010, it was given a new, extremely important foundation. The new Triglav National Park Act, which was adopted after almost ten years of efforts, has provided, together with the Alpine Convention, an opportunity and challenge of ensuring the nature conservation and sustainable development of the Julian Alps.

The territory of the Triglav National Park contains a unique natural and cultural heritage of Slovenia. The number, diversity and uniqueness of the natural phenomena, which are intertwined with the cultural landscape and rich cultural heritage, are the most important reasons for the protection of the Triglav National Park.

## Management Objectives of the Triglav National Park

The basic aim and purpose of the establishment of the Triglav National Park is to preserve its exceptional natural and cultural values and to protect its flora and fauna, natural ecosystems and the characteristics of inanimate nature. Moreover, the purpose of the Triglav National Park is to provide, in line with the primary nature conservation objectives, the opportunities for natural and cultural landscape-friendly sustainable development and people's life in the park and its immediate surroundings. An additional purpose of the Park is to provide the opportunities to experience nature, cultural heritage and spiritual values of this remarkable Alpine area.

National parks constitute in themselves a sufficient level of protection with a strong national value. The value of a national park is generally highly appreciated but, in many cases, the opinion of the residents, managers and owners of the land differs. There are actually only two possible paths in the management of national parks. The first entails an upright nature conservation orientation, which firmly and resolutely insists on the implementation of management objectives as the only guarantee of protection, preservation and sustainable development in accordance with the conservation and management goals. The other is just an illusory protection, where diverse activities are hidden behind the information board with the inscription "National Park", serving only as a backdrop to some other objectives or allowing compromise to such a degree that the true management objectives may vary due to specific

physical, geographical and biotic conditions, as well as the ownership and various other interests, but nevertheless there must be a common denominator. Integrated nature conservation within the context of protected areas is the only guarantee for the preservation of valuable natural features and ecosystems. Such protection can be achieved only on the basis of clearly defined management objectives and the protection of the most valuable parts of natural and cultural landscapes.

In the core area of the Triglav National Park, the primary management objectives are nature conservation, research, education and targeted visits. The objectives in the core area require the elimination of the exploitation of natural resources and undisturbed development of ecosystems, free of human influence. Termination of the exploitation of natural resources implies a restriction or ban on economic activities such as agriculture, forestry, water supply, exploitation of minerals, hunting and fishing. It is also not permissible to perform any land development or it should be very limited, change the landscape configuration, construct non-park facilities and carry out commercial recreational activities and sport competitions. The management of the core area is based on the protection of the area exempt from economic activities, arranging and equipping the area for visitors as well as on the coordination of the regulation of tourist infrastructure at the edge or along the border of the protected area. In the core area, opportunities must be provided for people to attend the events organised for cultural, recreational, educational and research purposes to the extent and in a manner that is not in conflict with the basic nature conservation objectives.

In the peripheral area of the National Park the measures for the protection and development are directed towards the maintenance and care of the cultural landscape and the promotion of traditional activities that preserve a distinctive identity and ensure the sustainability of natural resources. This mainly applies to sustainable regional development with an emphasis on organic farming, agri-environmental programmes, development and conservation of cottage industry, forestry, tourism on farms and promotion of nature-friendly tourism and recreation. The cultural landscape of the Alpine region is inextricably linked to the unspoiled nature. It is a remarkable and distinctive cultural landscape, co-created by man over the centuries, which is a mirror of the Triglav National Park. The main objective and purpose of management in the peripheral area is to maintain the cultural landscape through sustainable use.

#### Thirty Years of the Triglav National Park (1981 – 2011)

The Triglav National Park was legally established in 1981. If the present situation is compared with the situation thirty years ago, it is justifiable to speak of a modern

development of the park and a success story. The Park has become an established and exemplarily managed protected area not only in Slovenia but also on a European scale. A difficult path was embarked upon to enforce the IUCN international conservation standards, proclaim a biosphere reserve within the UNESCO MAB (Man and the Biosphere) programme, obtain the Diploma of the European Council, a prestigious European award for protected areas and, last but not least, to become a Nature 2000 site. In 2009, the Park, together with the Julian Alpine Foothills Nature Park in Italy (Resia Valley), obtained the EUROPARC Certificate for exemplary transboundary cooperation between protected areas.

## Management Objectives in the Light of the New Triglav National Park Act

In this section, the advantages of the new Triglav National Park Act are presented because, in the past years, in the professional and general public the view that the Triglav National Park is losing its status and content with the new Act has been recorded. But in fact, it is not so.

The new Triglav National Park Act was adopted after more than a decade of efforts. The Triglav National Park Public Institute, which manages the Park, is satisfied that the new Act is finally in force. The Institute prepared the analysis of the situation and the proposal for the amendment of the law already in the early nineties of the last century. It was pointed out that inconsistencies existed with the IUCN international standards and, therefore, a new law was required to provide for a phased implementation of the IUCN management categories. The old regulation of the Triglav National Park TNP, with a large core area covering about 56,000 hectares or two thirds of the total area, looked nice on the map. However, the core area by no means corresponded to the IUCN Management Category II for national parks. There were settlements in the core area and key activities, such as hunting and forestry, were allowed everywhere, since the old law did not even deal with such issues.

Already in 1993, the Triglav National Park Administration prepared a document "Triglav National Park Nature Conservation Concept 2000", representing a strategy for the establishment and implementation of the IUCN protection categories. The concept envisaged a "step-by-step" introduction of the management standards of the IUCN Category II in the Triglav National Park. In order to verify the concept, a special IUCN expert commission was invited in 1994. The Commission positively assessed the proposals and made several recommendations, which were observed throughout the drafting of the new Triglav National Park Act.

What does the new law bring about and how satisfied is the Triglav National Park Public Institute with it? The Institute, as the Park's management authority,

participated in the preparation of the technical bases for the new law. Expert solutions were derived from experience and knowledge, and were based on the established and regulated nature conservation system in Slovenia. The solutions were further harmonised across sectors, with the local residents, the general public and non-governmental organisations and, last but not least, the law was given its final wording in the process of political adoption both in the Government and the Parliament.

The new Triglav National Park Act has not brought about everything hoped for by the Institute. Other stakeholders and the interested public are of a similar opinion. The Institute's opinion that the new Triglav National Park Act was a very good compromise between the conflicting interests was taken up by the media and politicians. In any event, the Institute is pleased that the Parliament of the Republic of Slovenia passed the Act by political consensus.

The new Act is actually a complex regulation. It definitely enables better and stricter nature conservation regulations, while also offering, through the development policies and measures, the opportunities for sustainable development and functioning of agriculture, forestry and tourism in the populated areas. The new Triglav National Park Act sets high standards of protection for three-quarters of the Park's area, especially the first protection zone of around 31,000 hectares, which is a natural area free from human interference. The first protection zone fully meets the conservation standards of the IUCN Category II, while also flirting with the Ib Category. Elsewhere in Europe, there is some envy of the size of the protected area where everything is left to the natural development and is free from any human intervention, but also the recognition of the successful increase in the size of the most protected part of the Park. The Act assigns many more duties and powers to the Park's operator, not only in the strict nature conservation sense, but also in terms of management planning and sustainable development of the Triglav National Park.

The new Triglav National Park Act undoubtedly represents an opportunity for the people who live within the Park. Zoning of the Park into three protection areas, with the local population living in the so-called third protection zone, ensures adequate protection in individual zones. The third protection zone has the mildest protection regime, focusing on the implementation of statutory development policies, for which the Act provides preferential treatment in all tenders. Moreover, the Triglav National Park Public Institute is obliged and can financially support the programmes of nature conservation and sustainable development.

# Implementation of the Triglav National Park Act and Management of the National Park in the Context of the Economic Crisis

As already indicated, the new Triglav National Park Act represents a great opportunity for the Park's development in terms of nature conservation, sustainable development and the promotion of tourism. These three basic purposes of the National Park, the implementation of which should be interrelated, are achievable only by general public consensus regarding the support and significance of the protected areas and through the successful integration of the National Park in the local environment. Actually, the nature conservation objectives can be attained if the local development requirements are fulfilled, while maintaining the Park as one of the most important "promotional sale items" in Slovenia.

The Triglav National Park Public Institute rolled up the sleeves with the initial support of the founder (the State). The Institute prepared interim management guidelines, proposed the management plan as a fundamental implementing document of the programme to the Government, began to implement nature conservation and development projects, and has been very successful in winning and implementing international projects.

Since 2012, the Institute – as is the case at all public sector levels – has been in a deep crisis. Drastically reduced budgets, unfortunate merger of the environmental portfolio with the agricultural one and drowning in bureaucracy keep the Institute away from content-related work; consequently, the Park's operations and professional work are subordinated to a day-to-day survival. Moreover, partially truly necessary but still rigid bureaucratic government austerity measures and the general state of the society are, unfortunately, not in favour of protected areas. At the overall state level, the importance of protected areas is minor and parks do not have strong allies and advocates in the political sphere.

Pushing to the edge and saving on account of the programme content is certainly not an investment into our common future. The importance of nature conservation, ecosystem services, sustainable development and promotion of a tourism jewel, as the Triglav National Park is for Slovenia, is much higher than the current attitude of the State towards protected areas. Let us hope that we do not wake up too late or allow that protected areas became once again self-contained and self-infatuated state bureaucratic structures.

## Conclusions

There are still many ideas, goals and plans left. Nature would like to remain well preserved, and people desire to lead decent lives and have opportunities for sustainable

development. The challenges to be tackled in the Triglav National Park are nature conservation, sustainable development and, in particular, communication with the general public, with a goal to raise the awareness of the importance of nature conservation, protection of cultural heritage and sustainable development in the Alps. We believe that the protected area of the Triglav National Park may become a good example of successful cooperation between the various interests – environmental, economic, recreational, social and cultural – with a common goal to ensure the existence of a well-preserved nature, the environment and cultural heritage, and to create conditions for sustainable development of the Julian Alps.

The exceptional nature of the Triglav National Park lies in the fact that such a large number and variety of natural and cultural values cannot be found elsewhere in Europe, namely in such a uniform and homogeneous area, almost entirely protected as a national park, as are the Julian Alps in Slovenia. A rich blend of different landscape types, a widespread occurrence of karst phenomena, a large number and diversity of habitats, a large proportion of valuable natural features due to the geographical position and altitude, a rich flora and fauna and an important cultural heritage represent a great value and a "comparative advantage". Based on these reasons, it is established that the Triglav National Park is a remarkable national park on a European scale (Council of Europe 2004). It is evident from the above that the Triglav National Park is neither a botanical Eldorado, as romantically named by the first creators of the Triglav National Park in the early XX<sup>th</sup> century, nor a uniform forest or high-mountain region, but a unique and inimitable Alpine area with numerous and diverse valuable natural features, exceptional biodiversity and a distinctive cultural landscape with a rich cultural heritage. Therefore, we are indebted to present such an image of the Triglav Natural Park to all those interested in the Park and to the people who visit it or live there.

Legal basis for the establishment	Triglav National Park Act (Official Gazette of the Republic of Slovenia, No 52/10)
Date of establishment	27 May 1981
National category	National park
Biosphere reserve	National park Biosphere Area (UNESCO MAB) – 2003 Diploma of the Council of Europe – 2004
Geographical location	Julian Alps / south-western Slovenia
Size of the TNP and protection areas	Total surface of the protected area: 83,982 ha - Protection Zone I: 31,488 ha - Protection Zone II: 32,412 ha - Protection Zone III: 20,082 ha
Number of settlements	21 entirely and 12 partly within the park area
Number of inhabitants	2,444

## Triglav National Park Identification Card

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III. SUCCESS STORIES

## HOW WE STOPPED THE EXTINCTION OF POTTERY IN GORIČKO\* Karel Šalamon

Abstract: The "Young Potters" activity at the Grad elementary school is a successful example of the revival of one of the traditional crafts. Creating in clay is based on a respectful attitude towards technologies that have evolved over thousands of years. An active free time activity engenders incorporation of creative processes connecting design, cultural heritage and the laws of the modern market. For this purpose we have developed an innovative approach to teaching skills on the potter's wheel and created the necessary materials and personnel requirements. Our experiences are shared by valued artists in the field of ceramic design, featuring their contemporary expressive possibilities within the traditional techniques of black firing, as a noble bond between the traditional and the contemporary. Students of our school monitor all the activities, or they are actively involved in them, thus becoming the link between yesterday and tomorrow.

Keywords: students, clay, ceramics, pottery, potter's wheel, potter's kiln, black ceramics

Pottery is a craft industry which has been popular in the past. It has been an important source of income for many people. A fair without a potter's handiwork was not a fair and at home people used a lot of clay dishes. The industrial production of metal enamelware and plastics took over the pottery skills, whose roots date back to the prehistoric age which slowly sank into oblivion.



Image 1 – The fair in Murska Sobota (Jože Kološa, the 60s of XX<sup>th</sup> century)

<sup>\*</sup> Final thoughts on the article have been provided by Viktor Navotnik, Grad School Headmaster. Photos: Grad Elementary School Photo Archive



At our school Grad we started to follow the slogan "Pottery will not get extinct" a few years ago. We are very serious about this slogan and Young Potters have continuously associated with this idea since 1986. That was also the year when I, as a mentor of pottery craft and a young teacher, started creating the first curriculum for pottery craft at the primary school level on the basis of my thesis.

The task of the mentor is an important factor in developing extracurricular activities and therefore the relationship with master potters. My association with the pottery craft began with Adolf Hašaj (1941-1993) who was a potter from Kuzma. Master Adolf taught me the processing technology of clay and decorative products and he

also showed me how inanimate material can inspire the soul. Ivan Felbar (1934-2003) from Filovci revealed to me the combination of moves to spindle. I learned about the production of pottery with Bojnec in Filovci and with Franc Zelko in Pečarovci. I also learned at the Ceramic Industry Liboje about the industrial techniques and the theory of ceramic materials. From the neighbourly Hungary, in Magyarszombatfa, I learned how one can survive by selling pottery. Most of the craft's unsolved problems can be tackled owing to Štefan Zelko, a potter from Lemerje, who has been honoured in the registry of Slovenian living cultural heritage since 2010, which is under the auspices of UNESCO.



Image 2 – Štefan Zelko

The work is primarily in the form of extracurricular activities of two hours per week. In recent years, many generations successfully used clay and transformed it into a variety of shapes. Imagination turned into reality from product to product; interaction between us and the clay slowly, hour by hour, turned into a friendship and mutual alliance. The fruit of our first meetings with clay was cumbersome, resulting in crude products, stained workspace, dirty clothes and mockery of classmates. Persistent work on the spindle slows our soul. We are careful about every move of our body, because any violent gesture of the arm's length can fast result into a failure of the product.

The aim of the extracurricular activities "Young Potters" is to foster the revival of pottery activities and the associated skills. Students can develop the coordination of the body and a sense of aesthetics. They can also learn the technology of a ceramic product from the preparation of the clay to the final firing of the product and further understand the basics of marketing handicraft products.

The first contact with clay for our children commences in a kindergarten. In the first grade pupils learn about the pottery profession and they model some products by hand. They enrich their experience in the following classes of the first and second triad in the context of art education and engineering days. Since the school year 2010-2011, they can become members of a younger group of potters, led by the teacher Metka Recek. Young potters begin intensive work on the potter's wheel in the 6<sup>th</sup> grade and continue to work on the craft until the end of primary education.



Image 3 – The first contacts with clay

Throughout the years the school has taken care of the necessary material conditions, promotion of activities outside the school and of motivating future generations.

In the initial stages, the pottery was created on a wheel which was driven by an electric drill. The products were fired in a small laboratory furnace (only 8-litre large). After 1990, our work became increasingly visible outside the school. We participated in pottery camps in Filovci and started to cooperate with the Pomurje tourist offices and Regional Centre Alliance for Technical Culture of Slovenia in Murska Sobota. The latter has financed the construction of a traditional pottery kiln which was built in 1991 by Ivan Felbar. The stove stood in the open air, on the north side of the lime tree in the current kindergarten playground. Young Potters regularly maintained it, but it was only fired twice because it succumbed to vandalism.



Image 4 – Building of the first pottery kiln

The school has now purchased a modern 54-litre electric kiln for clay firing. In 1992, as a mentor of the extracurricular activities, I developed and manufactured a spindle with five worktops. The spindle has been patented by the Office for Intellectual Property in 1995 under patent number 9,300,174 and it is in use even today.

The effectiveness of the "Young Potters" has increased significantly. Our efforts in terms of recovery of pottery activities were presented at the Nature-Health Fair in Ljubljana, at the Fair in Graz (Austria) and on the national television during the show Klub Klobuk. We presented our work at the Days of Slovenian Education in Ljubljana in 1994.



Image 5 – Potter's multiwheel LPV-5

This was followed by years of hard work. The result was

a lot of products that were exhibited on many occasions. Many guests went home from school with a gift which was created on the potter's wheel. At the wheel, generations that loved the clay and imbibed pottery skills for a lifelong activity grew up.

## **Activities Outside of School**

"Young Potters" in the Raba region have attended an international pottery camp "*Pottery in the Past and Present*" for over nine years. Since 2006, we work closely

with the Števanovci bilingual elementary school where our students are active participants in the camp and it is a great chance to transfer their knowledge to their peers in Hungary. Part of the camp also takes place under my supervision in our school where participants watch the black firing of the products.



*Image* 6 – *Pottery in the Past and Present* 

To have a sense of the pottery crafts beyond our borders, we attended with some members of the group a pottery event in Pezinok, Slovakia, and in the Hungarian village Magyarszombatfa. We attended also the craft pottery workshops in the pottery village Filovci, organised by the Regional Museum of Murska Sobota in the international project Craftattract and conducted several workshops at the Festival of Youth for the Progress of Prekmurje. With a group of Young Potters we also conducted multi-day pottery workshops for all ages in the Regional Museum of Murska Sobota.



*Image* 7 – *The youth for Prekmurje's progress* 

In the school year 2008-2009 we worked with floral ornaments replicating the works of master Adolf Hašaj which are usually recognisable by the white glaze and the

characteristic painting of floral motifs. The Regional Museum of Murska Sobota dedicated an exhibition to master Adolf, entitled *HA*, *düša je bila umetniška*. An important part of the exhibition also contains our replicas of Hašaj's floral motifs.

#### Adolf Hašaj (1941-1993), Kuzma



*Image 8 – Adolf Hašaj* (Jelka Pšajd 2009: HA, the soul was artistic)

The family of potters Hašaj comes from Moščanci. Around 1940, Ludvik Hašaj (1912-1960) married into a family in Kuzma where he maintained his family practicing pottery.

Adolf learned pottery with his father Ludvik wherein he also completed his apprenticeship. Since the early demise of his father, he continued to work on his own. Crafts and pottery were his source of livelihood, but otherwise he was an artist at heart. He did not believe in mass production. His products have been built with a soul.

He prepared the clay at home. His mother helped him a lot. He also used industrially prepared clay which he bought in Austria.

Around 1936 he went to work in Burgenland in Stoob village. Stoob is a village with a long tradition of pottery craft. Today, there is a professional school of ceramics which remains a center of pottery craft. Master Adolf followed the

glazes technology work and metal oxides of the Viennese factory glazes Schauer in Austria. This was the turning point of his career and his profession.

After arriving home he used glazing for his sophisticated products by employing a transparent glaze with the addition of yellow, green and brown glaze. He has become recognisable by the white-glazed stoneware with a typical inglaze-painted floral motifs.



Image 9 – Floral motifs

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The flower decoration is the creation of the Hungarian and Austrian territory; he had encountered this art form in Burgenland. One could feel that Adolf was an artist in all that he created. A brush in his hand represented a toy. Every move was consistent with his simple artistic life, always relaxed and creative. In comparison with the patterns generated in the Austrian and Hungarian area, his patterns are alive and heartfelt; Adolf was indeed a folk artist. (Jelka Pšajd 2009: HA, the soul was artistic)

He sold his products at fairs. He stood out with his products from the rest of the Prekmurje potters whose products were alike. They were black and fired, painted and glazed by engobo with a transparent glaze or glazed with brown- or green-lead glaze. He only had white ceramic, painted with floral motifs, so his products had a higher price. He sold less articles at fairs during the last years because more and more customers were coming to his home. The year before his death he stopped working completely. All his products have the label "HA" at the bottom.



Image 10 – HA

An important achievement of recent years is the renovation of the pottery kiln which allows the traditional black pottery firing mode. The furnace, built by master Štefan Zelko, stood outdoors for two years. In 2010, the potter's workshop was upgraded and the stove got a roof above. This acquisition is a unique example of the efforts in revitalising such traditional crafts in Slovenia.



*Image 11 – Pottery workshop with the oven* 

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## The Process of Black Firing of Ceramics

Dry products are polished before firing. The potter puts them in the furnace. He closes the opening for loading and starts to burn with a light fire. The burning intensity gradually increases and the temperature rise is controlled by opening and closing the corresponding openings in the furnace. In order to obtain products characterised by a black colour and porosity reducement, it is necessary to complete firing with a rapid closing of the furnace. The potter needs one or two assistants to complete this action. First, it is necessary to close the vents and place on the coals in the hearth a reducing agent. During the phase of fire extinction and closing of the flue openings a real fight with the fire takes place. The flame grasps for oxygen through each hole and the smallest opening in the furnace with force, so the potter and the assistants tame the fire with energetic moves that are crucial to create the reducing atmosphere in which the red diiron trioxide (Fe<sub>2</sub>O<sub>3</sub>) is reduced to black triiron tetraoxide (Fe<sub>3</sub>O<sub>4</sub>).



*Image 12 – Closing the furnace* 

Over the next three hours we close the cracks, so that we can prevent any flow of air into the furnace. The temperature begins to decrease slowly. After about 36 hours, the furnace is cooled so that it can be opened and the items are removed from it.

## We Are Becoming Increasingly Recognised

The creative spirit that was built behind the walls of our school many years ago has flourished. People have now realised that the ideal options we offer in the field of pottery creation can make our school a meeting point for all those who love clay and find expression in it.

Since 2010 our school hosts third-grade students from the Secondary School for Design and Photography, the direction of art gymnasium in Ljubljana. Students learn



Image 13 – A modern approach to clay

in their school programme about artistic design in clay and they are looking for opportunities combining a modern approach with the traditional skills with clay on the potter's wheel. Their work has been displayed in May 2013 in the City Museum of Ljubljana, entitled "Designing with 5000-year Tradition" in the context of the accompanying programme of the exhibition "The Wheel, 5,200 Years". We moved the exhibition to our hometown in the renovated Lednar's tannery in August 2013 and it was inaugurated along with the opening of the amusement park "Vulkanija".

#### Foreword to the Exhibition "Inspiration from the Past"

The products of the pupils from the Secondary School for Design and Photography (SSDP) were created at the outdoor school in Prekmurje. The students made designer products with traditional methods of design and firing of the clay. Black ceramic is a result of a reduction firing which was carried out under the expert guidance of potter Štefan Zelko and myself at the Grad primary school. The purpose of the project was to actively engage students in the creative processes that link design, cultural heritage and crafts which were on the verge of extinct but are now revived. The ceramic products of SSDP students are inspired by prehistoric pottery vessels that were discovered during the archaeological research of a crannog in Ljubljana's swampland. Design and firing clay are the oldest human activities. The manufacture of vessels has become a mass production activity only during the domestication of plants and animals. First and foremost, these are dictated by the need to store excess food as well as the possibilities in the kitchen and home hearth. All dishes were made freehand, potter shaft was not known yet. They were fired with oxidative and reductive techniques which required extremely high temperatures and probably



Image 14 – Clay offers pleasures to everyone

special pottery kilns which have not yet been identified. The combination of elegant design and rich geometric decorations represents true artistic products. (Irena Šinkovec 2013: the text of the poster).

Since 2011, persons in care from the Protection and Working Centre of Kranj have visited us. They realised that the clay can find the appropriate expression of our soul. Pottery craft for an improved quality of life is a challenge to them as they deal with clay in their Centre. They test themselves on a potter's wheel in the context of three-day workshops. Their lives are also enriched by social events accompanying the firing of pottery products.

# My First Socialising with Persons in Care at the Protection and Working Centre of Kranj

Oh, dear! They are already adults. But do they know what it means to dirty one's hand with clay? Will they gather the courage to soak their hands into muddy water? Who will clean afterwards? Stupid questions that have swarmed upon my head until I met them. As soon as they reached for the clay, I was impressed with their skill and feeling for the material. I noticed that they have a lot of experience and they are by no means foreign to clay. When they were watching master Štefan, they expressed immense enthusiasm. In front of their eyes wonderful products were created and probably these were the moments when they felt within themselves the desire to work on the wheel. And now it was real. Five rotating discs, five pieces of clay and five worried faces. Are they able to do it?

Of course, they were able. The first contact with rotating wet clay conjured joy on their faces. They noticed that the clay becomes alive, responds to their approaches and listens to their soul. I am convinced that at that moment they stepped into another world. They forgot everyday concerns and ailments as well as emotional stress. All their energies were devoted to clay. They paid attention to the work instructions. They have made some mistakes, but hour by hour they became more independent, skilled and confident. They were not tired. They wanted to create more and more. And the cleaning? They cleaned our devices perfectly.

Our work was accompanied by a high temperature in August, but in the shadows of the mighty birches it was nice to work, hang out and talk with the people who helped me with their otherness, and revealing their life's wisdom based on their experience.

## Black

Fifteen members of the Association of Slovenian Artists and the Potters Society of Slovenia were preparing ceramic sculptures for the Second International Triennial of Ceramics Unicum 2012. Their work was enriched by our kiln. With the help of Štefan Zelko, we were firing the products by the traditional reduction method. The products were exhibited at the Ljubljana City Hall under the title BLACK until 9 November 2011.



Image 15 – BLACK



Image 16 – And once again BLACK

#### Foreword to the Exhibition BLACK

Modern expressive possibilities within the traditional techniques of black firing today act as a noble link between traditional and modern. An exhibition of contemporary artistic creation in the traditional process technology has a multi-layered approach because it involves heritage, tradition and contemporary art. A group of artists in Ljubljana was discovering the expressive quality and potential of reduction firing techniques. These are: Dragica Čadež Lapajne, Mojca Černač Pretnar, Polona Demšar, Meta Kastelic, Paola Korošec, Damijan Kracina, Eva Lenassi Peterson, Ksenija Makarovič, Roman Makše, Boštjan Novak, Andrej Pavlič, Karel Plemenitaš, Sonja Tavčar Skaberne, Mojca Smerdu, Katarina Toman Kracina, Urša Toman and Danica Žbontar. Their works were made in their studios and were burned under the leadership of Štefan Zelko, a potter from the village Lemerje, and Karel Šalamon, at the Grad primary school in Grad. The exhibition made us aware how knowledge and direct experience in the field of pottery technology may cross the fields of contemporary art practice, media studies and multi-faceted presentations. This method of firing in the past was the most known and used by a group of Prekmurje potters in Filovci. Black tank was preserved here also due to the commercial enterprise Dom which ordered a mass production of baked black decorative containers. Black vessels are known today in Filovci, in Grad and in Radovljica. The technological curiosity can invite a new impulse to creative processes. Different artistic approaches can reveal personal artistic worlds. Above all, some new opportunities were opened for the authors to research in the future. The authors bring a spirit of innovation into their work. The works represent a range from figuration to abstraction and bring a fresh perception to gloss black. The creative work of one of the oldest human activities is presented in a video projection. Our common heritage of primal experience of clay, a sense of identity and continuity is re-sensitised. (Ina Širca 2011: the text of the poster).

Many a word has been spoken about the importance of preserving traditional crafts, the market opportunities that exist in this field, the active leisure time, the sense of aesthetics and other values that they bring to enrich our lives. All these have always encouraged the students to play with the clay and create artistic pottery products. Today, we are proud of all those who have been occupying the potter's wheel and especially of those students who have mastered the pottery skills.



Image 17 – Young Potters

## **Final Thoughts**

We place a great importance in the preservation of cultural heritage in our school, in particular this applies to pottery craft which over the years has become a "red thread" of our operation. Due to the successful implementation of all these activities, we have become "A Cultural School of 2013" for the second time.

Since 2006, the school has earmarked an annual budget for improving the conditions of implementation of pottery activities.

From the humble beginnings in the potter's oven "under the open sky" today we have arranged a pottery classroom in nature which is exploited advantageously by our students and various visitors who want to learn the secrets of pottery.

A continuous improvement of the working conditions of pottery brings a higher quality which is presented in this article. We are also ahead in the Grad school with an appropriate development and direction in pottery craft that would live on, even when the current generation with the mentor Karl Šalamon slowly retreats and the management will be taken over by those who have over the years learned the secrets of pottery to such an extent that the craft can be passed on to the next generations.

## AGRICULTURAL AND TOURIST COOPERATIVE "ŽITEK" – AN INNOVATIVE APPROACH TO A SUSTAINABLE DEVELOPMENT OF GORIČKO-POMURJE, SLOVENIA Branislava Belović

Abstract: Pomurie lies in the northeast part of Slovenia, comprising 6.6% of the country's entire landscape, bordering Hungary, Austria and Croatia, and it is one of the least developed regions of Slovenia. On the initiative of the Čepinci local community, the agricultural tourist cooperative "Žitek" was formed, resulting in the establishment of a fair agricultural and tourist cooperative. It operates in the area of the Nature Park Goričko. The operating concept of the Cooperative is designed to encourage self-sufficiency and a local sustainable supply of food, conservation of the cultural and architectural landscape of the region, and scientific research, important for the region in which the cooperative operates. The innovativeness of the Cooperative business model in the Pomurie is reflected in its *developmental vision*, focused on a sustainable development of the countryside and a revivification of the Goričko landscape, ensuring a preservation of the population density as well as its rich natural and cultural heritage, while at the same time ensuring a high quality of life for the local population through *pooling the knowledge of acclaimed Slovenian* specialists (members of the Cooperative) by utilising traditional skills and local knowledge (members of the Cooperative – farmers and the local population) and establishing contacts between various institutions in Pomurie and Slovenia, and a fair agricultural and tourist cooperative. Since its very inception, the activities of the Cooperative were focused mostly on *encouraging of self-sufficiency* and a sustainable local food-supply by marketing of the surpluses generated by the economically weaker farms. The successful garlic story happened only after a twoyear period of the Cooperative operation. Despite its small size and only specific to local environment, Agricultural and Tourist Cooperative "Žitek" was mainly responsible for renewal of interest, demand and even cultivation of the indigenous Slovenian garlic in the entire area of Slovenia. The Cooperative has an incredibly good network of agreed partnerships in the local and national environment as well as with the neighbouring border regions. In the field of conservation of cultural and architectural image of the land, the initial phase of a project called "Nuova Gorička iža" ("New Goričko House") is under implementation. A Scientific Research Committee is working within the cooperative, the activity of which is mostly dedicated to encouraging and coordinating scientific research on all levels (undergraduate, postgraduate, foundational, applicative, innovative and targeted research projects), important for the region in which the Cooperative operates. The Cooperative essentially represents a model of an innovative approach to development of countryside sustainability which will contribute to a higher quality of life for the Goričko population, specifically for the economically weaker farming community.

**Keywords**: Pomurje region, Agricultural and Tourist Cooperative "Žitek", sustainable development, innovative approach, economically weaker farms

## Pomurje - The Least Developed Region of Slovenia

Pomurje lies in the northeast part of Slovenia, comprising 6.6% of the country's entire landscape, bordering Hungary, Austria and Croatia. It has a mainly flat terrain in its centre and undulating hillside at its borders. The region comprises three main geographical parts: Goričko, Lendavske gorice and Murska ravan. Goričko is the border hillside in the farthest north-eastern part of the country, bordering Austria in the west, Hungary in the north and east, and Ravensko terrain in the south.

There are 118,573 people living in Pomurje, which is 5.8% of the population of Slovenia. The region has been characterised by ageing population, low educational level, higher level of registered unemployment rate and lower GDP compared to Slovenian national average.

Less favourable social and economic determinants in the region have been accompanied by low-health indicators: highest level of mortality, larger number of hospitalisations, lower life expectancy and unhealthy lifestyle index of the population.

Pomurje is one of the least developed Slovenian regions. Economy is mainly focused on those operations that provide a lower value addition per employee in comparison with other regions in Slovenia. Traditionally, agriculture plays a dominant role in the regional economy and it is characterised by the cultivation of the prime land and extensive fragmentation of farmland ownership, and favourable climatic conditions for farming in the region. Ageing population is more pronounced, particularly in rural households engaged in farming and agriculture as their main activities.

Today, there are fewer farms and not all the family members can be engaged only in farming; the number of farms which gain their income from various other sources is increasing continuously over time. For a number of households, farming ensures complementary income and self-sustaining food production. Some households keep farming also for other noneconomic reasons.

During the last decade, many farms increased their complementary activities in the field of tourism and in the field of cultivation and processing of cash crops.

## An Innovative Approach to Sustainable Development of the Countryside and a **Revival of the Goričko Region**

The model of a fair cooperative – upon the initiative of the Čepinci local community (Nature Park Goričko), an agricultural tourist cooperative "Žitek" was established on 2 March 2010. According to the legislation, the Cooperative has the following bodies: general assembly, management board, cooperative president, supervisory board and a cooperative manager. The members of the Cooperative are, apart from its founders, all individuals and legal entities, and the Cooperative determines whether their membership is in the interest of the Cooperative and its members. The Cooperative adheres to the following goals regarding its activities:

- development of agricultural, tourist and other social and business activities
- marketing and promotion of its products and services to its members
- mutual help among the members of the cooperative
- fair production and marketing arrangements for the Cooperative's members and all others involved
- inclusion and development of new agricultural and crafts products
- advice and education
- promotion of ecological awareness, and
- preservation of the cultural and architectural image of the region.

The Agricultural and Tourist Cooperative "Žitek" operates in Goričko, the least developed part of Pomurje. It is working towards the development of the Pomurje region, especially the Goričko area, by implementing a fair cooperative model.

The innovativeness of the "Žitek" cooperative business model in Pomurie is reflected in the *developmental vision*. It is focused on a sustainable development of the countryside and a revivification of the Goričko landscape, ensuring the preservation of the population density and its rich natural and cultural heritage, while at the same time ensuring a high quality of life for the local population through *pooling* the knowledge of acclaimed Slovenian specialists (members of the cooperative) by utilising traditional skills and local knowledge (members of the Cooperative - farmers and the local population) and establishing contacts between various institutions in Pomurje and Slovenia, and a fair agricultural and tourist cooperative. Such a fair Cooperative ensures a rightful payment for the producer's product and a sustainable supply of high-quality foods at a reasonable price for the buyer.



#### The Cooperative's Operation

The operating concept of the Cooperative is designed in such a way that *it encourages* self-sufficiency and a sustainable supply of local food, conservation of the cultural and architectural landscape of the region, and scientific research, important for the region in which the Cooperative operates.

Since its inception, the Cooperative's activities were focused mostly on *encouraging* of self-sufficiency and local food-supply sustainability by marketing the surpluses of economically weaker farms. It is especially important that the Cooperative seeks to ensure the selling of smaller size surpluses which formerly had very little outlets due to the smaller quantities, infrequent availability and a lack of proper sales networks.

By encouraging self-sufficient provisioning, mainly with vegetables, fruits and grains, the Cooperative contributes to a higher quality and healthier diet of the population. Also, by selling the farm surpluses, it contributes to the local sustainable self-sufficiency especially with produce grown by traditional and health-friendly means, and per force making available healthy and safe foods.

The Cooperative is focused on supporting farmers in the process of their cultivation, processing, preparation for commerce, and selling their produce and products by ensuring purchase, encouraging a multi-activity model on farms (supplementary processing, tourist and craftwork activities). Special care is taken to informing, promoting awareness, and educating the Cooperative members in the fields of cultivation, development of new products, processing, protecting the environment and the authenticity of the landscape (culture, architecture), and in healthy dietary habits centred on seasonal and locally grown vegetables and fruits.

In the first year of the Cooperative's operation special care was warranted with regard to the promotion and marketing of local produce and products. For that purpose a visual identity of the Cooperative was developed – this is what distinguishes it even to this day. The marketing niche was established through a network of Cooperative members and a grid of personal acquaintances in the region and farther out (mainly in Ljubljana, Slovenia's capital – bigger buying power). More than fifty contributors, mostly from economically weaker farms, offer various products and produce, prepared or grown in traditional ways: seasonal fruits and vegetables, dry fruit, fruit juices, various oils, grain and grain products, home-baked bread, home-made pasta, traditional "pereci" (pastry from leavened dough), walnuts, linseed, honey, etc. Local produce and products are also the basis for a rich collection and selection of casual gifts. The local population also prepares small feasts – a traditional local specialty. In summer time they offer healthy lunches, solely produced from local food, adjusted to those with sedentary work and sedentary lifestyle.

The Cooperative takes special interest in the employability and eliminating undeclared work by helping farmers secure the status of a complementary activity and buying off products with all tax obligations settled.

The successful garlic story happened in "Žitek" only after two years of its successful operation. It is an exceptionally eloquent case of good practice enshrining that great stories can be created even in undeveloped and local environment. Despite its small size and specific to a local environment, the Agricultural and Tourist Cooperative "Žitek" was singularly responsible for renewing the interest, demand and even cultivation of the indigenous Slovenian garlic in the entire area of Slovenia.

"Again, we will smell the fragrance of Slovenian garlic," it said in an article by reporter Ivan Gerenčer in the national daily newspaper "Delo" on 28 August 2011 where he wrote about the initiative of the Agricultural and Tourist Cooperative "Žitek"– cultivation of indigenous Slovenian garlic. On 17 September 2011 the same author reported that "two tonnes of Slovenian garlic (was) sold in a few days". He continued with "Great sales victory of the cooperative is its *home-grown Slovenian garlic*, cultivated by two of its members. Two tonnes of garlic have been sold in only a few days." The newspaper "Finance" published an article by Mateja Bertocelj on 5 September 2011 titled "Rebirth of Slovenian garlic is coming back", states among other things: "Because we often question the quality of fruit and vegetables that come from distant lands, it is all the more welcome news that Pomurje's Agricultural and Tourist Cooperative Žitek members have cultivated more than a tonne of Prekmurje garlic. Slovenian garlic is therefore slowly coming back!"

The demand for indigenous Slovenian garlic has increased dramatically, as well as its supply all over Slovenia which is now at a remarkable height.

The Cooperative is strongly embedded in the local environment and has an incredible local and national network of collaborative and agreed partnerships as well as in the neighbouring border regions. It is successfully obtaining new projects with partnering organisations, and investing further into the local environment in the field of selfsufficiency and local food supply. It is involving itself in various social activities in the environment where it functions. It is also interacting and actively cooperating with various expert institutions in Pomurje and Slovenia, and with partners in the border regions of Austria, Hungary and Croatia, mostly in the field of encouraging local sustainable supply of healthy food.

At the moment the Cooperative is involved in two projects which will contribute to the overall sustainable development of the countryside and a revivification of the Goričko landscape, enabling the economically weak rural population a better quality of life. The first project, called "From Self-sufficiency to Local Efficiency" (the main partner being the Agricultural and Tourist Cooperative "Žitek" partnering with the municipality of Cankova and Society for Sustainable Development of the Countryside Žitek), has the following goals: to encourage the production of produce needed for self-sufficiency of the economically weaker farms and the selling of their surplus; establish and ensure the sale of surplus of locally-produced products through complementary activities on economically weaker farms; pilot testing of the model of support to the local community for creating added value to the already existing activities in the field of production/processing and the selling of the product, and raising awareness among people about consumption of food produced in the local environment and about healthy eating habits. Pilot testing of the model and preparation for its transfer into other regions also falls into its goals. The project is co-financed by the European Agricultural Fund for Rural Development (EAFRD) – Europe is investing in the countryside.

The second project "Eat and Choose Healthy", which is headed by the Pomurje Cancer Society, together with its partners: Institute of Public Health Murska Sobota, Agricultural and Tourist Cooperative "Žitek", Society for Cardiovascular Health Pomurje, and Karlovac County (Croatia), is a good example of interinstitutional and interdisciplinary cooperation and activities in the field of promoting healthy eating habits. The goal of the project is to promote interdisciplinary partnerships (local and beyond the border) for best performance in the field of improving the quality of life for the broader population, promoting healthy ways of life, and a local sustainability and food production self-sufficiency.

The Cooperative "Žitek" is presenting its approaches, activities and experiences in various professional gatherings. Among other things, its members have organised a workshop at the Summer School "Tackling Health Inequalities in Practice", organised by the Institute of Public Health Murska Sobota as part of the Action-for-Health project, involving ten EU countries. The project Action-for-Health is aimed at improving the health and quality of life of citizens by tackling health inequalities (HI) and by means of health promotion. This will be achieved by increasing the capacity of regional stakeholders to use health promotion interventions to effectively tackle HI as a core part of regional action plans. This project connects ten countries from all parts of EU (SI, UK, NL, ES, HR, HU, BG, SK, LT, EE) in a meaningful partnership, using their existing capacity in reaching synergistic and sustainable effects. The project intends to increase its capacity on regional level which has already been identified as an obstacle in the use of structural funds (SF). The project's further objective is also to prepare an action plan by joining forces and efforts in different sectors in the region to reach a comprehensive approach to improve health and reduce HI. Joint action of important stakeholders from different sectors in region will enable a comprehensive approach to improve health and reduce HI in the fields of health, education, employment and environment (more information available at: www.action-for-health.eu. Project co-ordinator: Tatjana Krajnc-Nikolić, Zavod za zdravstveno varstvo Murska Sobota, tatjana.krajnc-nikolic@zzv-ms.si).

The active participation in organising the Regional Developmental Programme for Pomurje for the period of 2014-2020 is also important.

In the field of *conservation of cultural and architectural image of the land*, the initial phase of a project called "Nuova Gorička iža" ("New Goričko House") is under implementation. The speciality of this project is inter-institutional partnership and professional support from the Scientific Research Centre of the Slovenian Academy of Science and Art (ZRC SAZU), the Franc Stele Art and History Institute, the Institute of Anthropological and Spatial Studies, and the Anton Melika Geographical Institute. That is how we came to the conceptual design for a house, shaped as an interpretation of the typical Prekmurje "cimprača" (a traditional house). It imitates it in its volume, its recognisable shape, in its relationship with the given topography, in the way it is engrained in the Prekmurje landscape, in its simple logic, rational utilisation of locally available materials, absorption of sun's energy, and lastly, in its reserved usage of decorative architectural components.

With the realisation of installing the "Nuova Gorička iža" in Goričko, the house will serve as a model for a new settlement.

A Scientific Research Committee is working within the Cooperative, the activity of which is mostly dedicated to encouraging and coordinating scientific research at all levels (undergraduate, postgraduate, foundational, applicative, innovative and targeted research projects), important for the region in which the Cooperative operates.

The Cooperative is now recognised both in the region and in the Slovenian space. It is also recognised among the agricultural population which is – on its own – showing an increasing interest for collaboration with the Cooperative. Of course, the highest interest is among those from the economically weaker farms. The cooperative has more than 50 members and around 80 providers that either regularly or occasionally offer their produce and products for sale. The Cooperative has encouraged and contributed to new workplaces or part-time employments.

The Agricultural and Tourist Cooperative "Žitek" also has a wide network of consumers, both in the region as well as in the rest of Slovenia – mainly in the capital. Because the farmers offer quality products, produced in a traditional and healthy way, they are well recognised and sought after in the market.

Of course, many different obstacles arise in the functioning of the Cooperative, but, in most cases, they do not hinder or inhibit the fulfilment of its goals or the betterment of the Goričko community. Visibility, trust, integration in the local environment, a developed network and a high motivation are only some of the factors that contribute to the realisation of Žitek's goals.

In the ensuing period we foresee the inclusion of economically weaker farms from all over the Pomurje region, meaning those who are outside the Nature Park Goričko. We also wish to revive the production of traditional cultivations, such as the indigenous brands of beans, indigenous brands of fruit and others. We wish to revive the traditional preparation and supply of jams, dry fruit, winter stores (in Slovene *ozimnica*), and other products. We wish to stimulate economically weaker farms, especially those in the area of the Nature Park Goričko, to take advantage and become suppliers of locally and traditionally prepared foods, since the synonym for Pomurje in other regions of Slovenia is something "natural, healthy, delicious, and hospitable."

The Cooperative essentially represents a model of innovative approach to development of countryside sustainability which will contribute to a higher quality of life for the Goričko population, mostly for those from economically weaker farm sections. This model, as it is now in the final stages of its pilot implementation, can be replicated to different environments in the region and even farther.

## KMICA ASTRONOMICAL SOCIETY Mitja Slavinec

**Abstract**: This year, the Kmica Astronomical Society (Kmica AS) has reached maturity. Until now, the Kmica AS has certainly justified the reasons for its establishment and operation. Not only that it has provided the north-eastern Slovenia with access to astronomy and science, its activities have also reached the entire Slovenia and beyond. The Society has evolved and grown through important astronomical events and other turning points by which it has gained new members and thus the Kmica AS has become the most numerous astronomical society in Slovenia. The astronomical equipment has been continuously updated and at disposal to the members, which has enabled them to accomplish some great astronomical achievements and host public observations.

The activities of the Kmica AS cover three fields, namely astronomical events, education and publishing. Over the years, most activities have become traditional; moreover, the diversity and uniqueness of certain astronomical phenomena have enriched the programme and given it significance.

The Kmica AS brings astronomy closer to the public and provides professional astronomers with a firm foothold. The Society is pleased with mutual cooperation, enabling top scientists to prepare the ground for their successors. Their lectures and support guarantee excellent research results and information about the latest scientific developments in the field of astronomy.

**Keywords:** astronomy, physics, solar eclipse, publishing, Kmica Astronomical Society, astronomy camps, Pomurje, Goričko

## The Growing of the Kmica Astronomical Society

The Kmica Astronomical Society had been active long before its establishment on 8 June 1996. It is no coincidence that it was founded at the meeting of the Society of Young Researchers of Slovenia, organised by the Slovenian Association for Technical Culture. The latter contributed to Kmica's development and provided the Society with premises in the Borovnjakova Street 1, Murska Sobota, where the Society's headquarters have been situated since its establishment.

It would be difficult to choose a better and more appropriate name for the Society, as the word "kmica" means dark. On the one hand, the word associates with night when most astronomy-related activities and astronomical observations take place, and on the other, it indicates that it can be pleasant and beneficial even in darkness.

The most important goals behind the establishment of the Society were the popularisation of astronomy, integration and education of amateur astronomers, organisation of astronomical observations, lectures, camps, excursions, publishing activities and cooperation with other astronomical societies. The Society endeavours to realise its goals through the organisation of astronomy camps, public observations and astronomy evenings, as well as by joint activities with astronomical clubs in primary and secondary schools.

All the time, the highest importance has been given to the professional training of the members. The Society is aware that this is the only path to acquire the knowledge and experience to independently organise high-quality astronomical camps, science evenings, lectures, astronomical observations and other professional events. All doctors of physics in the Pomurje region are members of the Kmica Astronomical Society. Two of them, Dr. Andreja Gomboc and Dr. Primož Kajdič, are professional astronomers.

The most important events are astronomical youth camps. The Society can also pride itself with its publishing activity, comprising the annual professional publication "Astronomers in Kmica" (in Slovene *Astronomi v Kmici*), the astronomical wall calendar and the star chart. Furthermore, as a part of its educational activity, the Kmica AS organises non-technical lectures and astronomical observations for the youth and others interested in the matter.

Together with the Javornik Astronomical Society, the Kmica AS was the initiator and a founding member of the Astronomical Association of Slovenia which enabled a closer cooperation with numerous astronomical societies in Slovenia and abroad.

The Kmica AS carries out its mission successfully due to a very close and effective cooperation with a number of partners, such as the Slovenian Association for Technical Culture, the Pomurje Academic Scientific Union, the Pomurje Academic Centre Club (PAC Club), the Faculty of Natural Sciences and Mathematics of the University of Maribor, and many companies, primary and secondary schools in the Pomurje region.

Thanks to a close relationship with the Slovenian Association for Technical Culture, the Kmica AS managed to organise the first astronomical youth camp already a year after its establishment. Just before the start of the camp, the Association provided most funds for the purchase of the first telescope. In winter 1998, the telescope was installed at the Society's astronomical observatory at the Fokovci Primary School.



Figure 1 – The first Kmica's astronomical observatory at the Fokovci Primary School

In August 1999, the Kmica AS found itself in the spotlight of the Slovenian public for the first time because a total solar eclipse could be seen only in the Prekmurje region. Therefore, the Kmica AS appeared in almost all Slovenian media, and its press conferences were broadcast by national and commercial television stations. In cooperation with the Roto and Inoks companies, the Kmica AS arranged for the photographing of the lunar shadow on the Earth's surface from a helicopter. The members were so fascinated by the eclipse that they decided to watch eclipses again in Zambia in 2001 and in Turkey in 2006.



Figure 2 – Solar eclipse in the region of Goričko, 1999

Moreover, the Society helped to set up the PAC Club's observatory on the roof of the Triglav Insurance Company building in the centre of Murska Sobota. Despite the efficient computer-guided Meade LX 200 telescope, the observatory was not intended for advanced astronomical observations due to the high light pollution in the city, but rather for the popularisation of astronomy.

Soon, the Society bought another small computer-guided Celestron telescope which was much more convenient for public observations. In addition to conventional equipment for astronomical photography, the Society also equipped itself with a Starlight Xpress MX7C CCD camera.



Figure 3 – During the setup of the CCD camera, a mosquito was accidently photographed at a distance of more than 200 m

A very important turning point and a big momentum for the Society was the International Year of Astronomy 2009 whose national coordinator was the Society's member Dr. Andreja Gomboc. The Kmica AS, as an indisputable expert authority, advised mentors for the purchasing of astronomical equipment. Teachers and mentors were trained to use telescopes which were provided by the line ministry for all schools in Slovenia.

In Slovenia, the opening of the International Year of Astronomy was organised only in the Pomurje region. At the four-day marathon of a hundred hours of astronomy, a look through the telescope was offered to over one thousand people from Pomurje. An international exhibition of astronomical photographs was put up at the Gallery of Murska Sobota. At the PAC Club, the Kmica AS exhibited its members' astronomical photographs and upgraded the exhibition with artistic paintings on the subject of astronomy, painted especially for the occasion by the Society's member Lojze Verbič. Over the years, the Kmica AS has grown ever bigger, expanded its activities and reached a hundred members, and today it is the largest astronomical society in Slovenia.

## Kmica as Development through Astronomical Camps

The most important activity of the Kmica Astronomical Society are the youth astronomy research camps organised in cooperation with the Slovenian Association for Technical Culture since 1997. The camps are unique hatcheries of new personnel and others interested in astronomy, where astronomy and science are presented in a non-technical and friendly way. Let us look at the professional work of the Kmica AS from the point of view of astronomical camps.

The first camps were held at the Fokovci Primary School. After nearly a decade, the camps moved to the Gornji Petrovci Primary School for organisational reasons, as the new location was more appropriate for the Society's cross-border initiatives with Hungary. The Kmica AS members have always been welcome at these schools and are most grateful to the schools' staff for their help.

At the first camp there were twenty participants who had no previous experience in astronomy. The academic part of the camp was implemented by the team of the Javornik Astronomical Society under the leadership of Niko Štritof. The camp also represented a turning point for the Javornik Astronomical Society, since it was the first time they helped a society far from their observatory and headquarters in Ljubljana. It was this very cooperation that contributed to the reinforcement of the Kmica's staff and to the Javornik's acquisition of organisational skills. At camps, the youth worked in three groups: Fundamentals of Astronomy, Solar System and Variable Stars.

The following year, mentors from three societies participated in the camp, namely from the Javornik, Orion and Kmica Astronomical Societies. The participants' level of knowledge was higher and it was nice to see again the participants from the previous year. Also, the approach to preparing a bulletin changed and thus it became a professional publication. Instead of individual reports, the participants worked in groups and the bulletin became more interesting and clearer.

The third camp was undoubtedly the most important one. It was held on the national level because the Slovenian Association for Technical Culture placed it on the national list of research camps. The camp that took place from 9 to 14 August 1999 was attended by a record number of 43 participants and the number would have reached at least 60 if the Society had accepted all candidates. The group of participants was diverse: there were eleven students, eight secondary school students and twenty-four pupils.

The main theme of the camp was, of course, the total solar eclipse. Most participants observed it visually. They protected their eyes with special glasses made by themselves during the camp with the help of the Praprotnik Printing Works. The eclipse was also observed as a telescope projection, and some captured it with a camera.



Figure 4 – Participants in the third Kmica AS astronomical camp

The Kmica AS members observed the solar eclipse live and reported about it from different locations. The most important contribution to the wider recognisability was the live coverage of the solar eclipse by the national television.

The eclipse was the most magnificent spectacle that nature could have given to humanity. All members were impressed. They were pleased and proud that no eye injury was reported, which was the result of constant preventive activities and warnings for eye protection and other rules and procedures for safe observation of the eclipse in mass media.

In subsequent camps, the Kmica AS followed its mission to bring astronomy as close as possible to the general public and to enable astronomical observations. Considering that at that time the price of telescopes was much higher than nowadays, its purchase was even more important. To all camps the Society invited an eminent lecturer who introduced the latest scientific discoveries in the field of astronomy to the participants and others interested in the matter. Not less important were various professional lectures given by members and mentors which significantly improved the educational level.

Another turning point was the seventh camp, and the first international astronomical camp, held in 2003 at the Gornji Petrovci Primary School and at Monošter, Hungary

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- attended by 31 participants, of which 24 from Slovenia and 7 from Hungary. In addition to achieving its professional goals, the Society established bonds with Slovenians living in the Raba Region in Hungary.

In astronomy, the oldest science, there have always been new technological achievements that enable a broader view of the universe. After the purchase of a CCD camera, the Society established a Digital Photography Group. The members combined the telescope with the CCD camera and made some enviable photographs of the objects whose beauty would have otherwise remained hidden.

At the camp in 2004, the Kmica AS achieved one of its greatest professional successes. On Niko Štritof's advice, the idea of photographing a planet orbiting a star (exoplanet) was expressed, and it was exactly the right time because the TrES-1 (or GSC 2652:3142) in the Lyra constellation was high in the sky. The orbital period of the planet was almost exactly three days, and its transition took place sometime between 11 p.m. and 2 a.m., so there was no problem to find an appropriate day to see the transition. The first transition took place on 29 August and the second one a day after the camp was completed. During the camp duration Samo Smrke was unsuccessful in observing the phenomenon and for that reason he continued after the camp concluded. On 1 September he took 332 photographs and got a curve on a logarithmic scale that clearly presented a decrease in brightness for 0.02 in magnitude (about 2%). That was the first amateur confirmation of a planet's transition after only three transitions since the confirmation had been made by professional astronomers. The measurements were published in the Extrasolar Planets Encyclopaedia and on the Transitsearch.org website, as well as in the world's leading astronomical publication Sky & Telescope in December 2004.



Figure 5 – Measurements of the TrES-1 star brightness confirming the existence of an exoplanet

It was an attention-grabbing achievement of global importance that instilled momentum and confidence in all members. The final presentation of results and the recognition award ceremony was followed by an astronomical evening where colleagues from other societies that supported the first Kmica AS camps were welcomed.

In the meantime, Igor Vučkič, one of the Society's members, accomplished his longtime wish: he built the Magašov Brejg Astronomical Observatory which can compete with other observatories in Slovenia and abroad. It is a priceless achievement that provided the Kmica AS with a new place for working in an unpolluted area in the Goričko Nature Park where the natural night sky light is intact. A wideranging meadow around the observatory offered the ideal conditions for individual observations with portable telescopes which, usually in May, culminated in excellent astronomy nights with 50 or more participants.



Figure 6 – Magašov Brejg Astronomical Observatory at Ivanovci

Another important innovation was the connection established between the camps and youth research work under the patronage of the Science for the Youth movement, organised by the Slovenian Association for Technical Culture. First, the participants prepared research papers and then upgraded and presented them in the following year at the Young Researchers Reunion. It was a pleasant way to connect two important fields: youth research camps and youth research work.

### **Publication Activity**

At the inception of the Kmica's main publication, the Society's ambition was to introduce its work to the members and others through professional articles and reports. The idea reflects in the publication's title *Astronomers in Kmica*. The bulletin of the youth camp has improved and developed into a good publication that included professional articles of other astronomers and has thus become an interesting reading and study material in schools.

The Kmica AS regularly publishes the only astronomical wall calendar in Slovenia, reminding people of interesting astronomical events which must not be overlooked. Because of the practicability and the members' astronomical photographs, many Slovenian astronomers eagerly wait for it every year.

A star chart is an indispensable aid to orientation in the starry sky and astronomical observations. The Kmica AS published it for the first time more than ten years ago and now the second reprint is being prepared. The chart is particularly useful because of its size and a special technique that allows its easy use in the dark. The Kmica AS members receive all publications free of charge.

In addition to the above-mentioned publications, the Society has published several other occasional publications and promotional folders; moreover, also important is the publishing activity of its members in international publications.

## Conclusion

The Kmica Astronomical Society has been successful in achieving its goals and is eager to do so in the future. Its main goal continues to be the spreading of astronomical spirit and bringing astronomy close to a wide range of people. If the interest in astronomy continues to grow, this will be a confirmation that the Society is on the right track.

# SCHOOL GARDEN AT THE PUCONCI PRIMARY SCHOOL Ernest Nemec

**Abstract:** Records in school chronicles indicate that the school garden had an important role in the functioning of the Puconci Primary School in the past. In the changed conditions at the end of the XX<sup>th</sup> century the operation of school gardens died away in Slovenia. However, this was not the case at the Puconci Primary School where good conditions were created for diverse activities within the school garden to supplement classroom learning. The process of establishing learning in nature started again at the beginning of the new century when schools were implementing a number of projects under different names, but with a similar content. For the implementation of school garden activities the Puconci Primary School has an ecoclassroom, a permaculture garden, a field, an orchard and an apiary. Working in the school garden contributes to raising awareness among schoolchildren, their parents and local citizens about environmental protection and a healthy lifestyle.

**Keywords:** school garden, permaculture garden, eco-classroom, creative activities, environmental protection, healthy lifestyle, sustainable development

## Introduction

"The basis for the education in agriculture and nature is a properly arranged school garden, from where children draw the key concepts of agriculture, fruit growing, vegetable gardening and beekeeping, while also nurturing their love for nature, and their joy and willpower to work. Therefore, a school garden must be wellordered and prudently cared for in aesthetic and economic terms. A school without a garden cannot satisfy the parents' and the society's wishes to raise the offspring into hardworking farmers, keen masters and housewives and, in particular, people who love nature and appreciate work; therefore, it is a duty of all educators to pay attention to this."

These thoughts were written down as an important order of the educational administration in the article entitled "School Gardens and Agricultural Education" (in Slovene *Šolski vrtovi in kmetijski pouk*), published in the *Učiteljski tovariš* journal on 19 August 1926. Records in the Puconci Primary School chronicles of the last century largely confirm the above-mentioned instruction, since a wide variety of activities associated with the school garden continued throughout the school's history.

# 1. Review of the School Garden Activities at the Puconci Primary School in the XX<sup>th</sup> Century

"I respect myself and others, so I learn for life with joy and responsibility to work." The words in this sentence represent the vision of the Puconci Primary School and constitute the essence of developments at school where pupils are at the heart of all activities. Throughout history school has always played an important role in the life of man and has been a driving force of social, political and economic life.

The beginnings of education at Puconci date back 230 years when the Evangelical Parish was founded on the 4<sup>th</sup> of August 1783. At the beginning teaching was carried out in different houses, but in 1800 a wooden building with a large classroom and a teacher's apartment was built. In 1860 the building of a one-storey schoolhouse with two departments started. As the Parish covered a large area there were many children at school, despite the fact that more than 200 children in the school district, half of them from Puconci, did not go to school. Although some teachers endeavoured to make children learn as much Hungarian as possible, the home dialect continued to prevail at school. After 1907, instruction was only in the Hungarian language, between the two world wars it was in literary Slovenian, during the Second World War in Hungarian again and after the war in the Slovenian literary language.



Figure 1 – Schoolhouse at Puconci in the past

In the past, people were deeply attached to the land, their life-source. Therefore, the school also had to provide education in this area. The best practical knowledge was delivered through lessons in the school garden. Interesting information on this can be found in school chronicles.

Each school year priority was given to a particular selected area of agricultural education. For example, in the 1922-23 school year lessons were dedicated to livestock production, fruit cultivation, beekeeping and important veterinary orders, while in the 1923-24 school year three hours a week were allocated to fruit cultivation, fruit-tree pests, livestock production and important veterinary orders. In the 1924-25 school year fruit cultivation and viticulture were dealt with during the agriculture classes. The 1925-26 school year was marked by a significant enlargement of the school tree nursery. In the 1926-27 school year a two-day training course on fruit cultivation, viticulture, seed breeding and beekeeping was conducted for schoolchildren and independent farmers for the first time. Agricultural courses became a regular practice: a six-week training course in plaiting was implemented in 1929. In the 1930-31 school year the curriculum included teaching of handicrafts, while in the 1932-33 school year a practical training course in gardening took place under the guidance of the district supervisor of teachers-gardeners in the entire district. Courses for young women and housewives were subject to special attention. Thus, in the 1933-34 school year 17 girls attended a housekeeping training course. Since exhibitions held a special place in the school programme, a gardening exhibition was organised in 1935.

The school garden often felt the heavy consequences of droughts, storms and also man-made disasters. In June 1929 a powerful storm threw a hundred years old lime tree over the schoolhouse and severely damaged it. The same year hail ruined the school tree nursery and heavily ravaged the school surroundings. The nursery was rehabilitated by 950 sprouts already in 1929. Budding was performed by students of the advanced school of agriculture.

On 18 April 1939 the school held a Reforestation Day. Each pupil planted three forest saplings in this joint action. After the Second World War, various weekly programmes were often organised. In the 1954-55 school year a municipal week of cultural and sports programmes, a livestock exhibition and an exhibition of documents about the War was held at Puconci. On 14 November 1956 a lecture with reversal films was conducted for farmers. On 18 April 1958 films on agriculture were played for schoolchildren. In the 1963-64 school year pupils participated in a working action of corn harvesting for the Puconci Agricultural Cooperative. In the 1964-65 school year the school cooperative had a garden, an orchard and a currant plantation. A lot of foodstuff for the school kitchen was obtained from the garden, cultivated by schoolchildren themselves, also during the summer school recess. In those times, pupils were greatly involved in production activities. In the 1965-66 school year children from the fourth grade on were harvesting corn for two days. The money earned was spent on trips. Schoolchildren also participated in the landscaping of school surroundings and in the harvesting of potatoes, beans and cabbage.

The school cooperative managed the garden and currant plantation. The garden was well maintained. It was cultivated during the housekeeping classes and outside school hours. Schoolchildren were gathering the crops and pickling cucumbers for winter use. In the 1984-85 school year they produced about 1.5 tonnes of potatoes and 1,320 kilograms of corn grain in the school garden. Also, lots of vegetables were produced in the school garden and used for school meals.

In addition to other socially useful and necessary work, the pupils also carried out the following activities in the 1985-86 school year: the eighth graders were involved in reforestation, while the seventh and eighth graders were picking grapes at a farm in Mačkovci. In the school years of 1986-87, 1987-88 and 1988-89, the eighth and seventh graders participated in the reforestation activities of the Murska Sobota Forest Management Company, worked in the production of quartz sand and in the meat products factory at Murska Sobota. The schoolchildren were involved in gardening activities, including the arrangement of flowerbeds and lawns and planting of trees. In 1993-94, they picked grapes and spent the earned money for the final school trip. Within the socially useful work in the 1994-95 school year, the pupils collected seeds of pumpkins that had grown in the school field. The school cooperative operated a store of school supplies and ice-cream and 50 litres of honey were produced in the school apiary.

## 2. The School Garden Today

We live in a time of rapid scientific and technological development which greatly affects the school environment. Not long ago it was possible for most children to come into contact with farm chores, even those who lived in cities, as they often spent their vacations or weekends at their relatives' in the countryside. Today, this is becoming increasingly rare. Therefore, schools must provide knowledge for sustainable development by teaching and learning outside a classroom or laboratory, i.e. in the school's surroundings and in the natural environment.

For the development of each child contact with nature is of vital importance. It can be provided through a school garden where skills and knowledge necessary for effective sustainable development are acquired, namely, by:

- experiential learning (the child learns about the environment from different scientific and artistic aspects, and increased physical activity)
- acquiring skills, patience and responsibility in solving problems independently or through teamwork
- awareness of the coexistence in the environment (respect for diversity, awareness of the importance of self-sufficiency)

- strengthening of community relationships (school family local community)
- experience of aesthetics and taking pleasure in the results achieved.

A school garden is a unique platform for the implementation of activities in all school subject areas:

- sport (a variety of physical activities and opportunities for relaxation and spiritual growth)
- nature sciences (learning about biotic abilities, etc.)
- physics (drawing up plans for planting, response of plants to weather conditions, etc.)
- mathematics (measurements for planting and construction of facilities, etc.)
- technology (making of feeders, tools, etc.)
- design (sculpture and painting making benches, art workshops)
- music (listening and creating music in the garden, etc.)
- linguistics (etymological research of plant names and geographical features)
- fiction (literary workshops on the Garden of Eden, magical plants, etc.)
- history (historical overview of the landscape features in terms of self-sufficiency, etc.)
- geography (research of the relief, geographical position, climate observation, etc.)
- housekeeping (crop storage, food preparation, hygiene, etc.)
- ethics (interactive games, decision making for environmental management, etc.)
- safety (safe stay and work in the garden with appropriate means of protection and tools, etc.).



Figure 2 – Technology Day – making of the eco-classroom

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## 3. Operation of the School Garden at the Puconci Eco-School

The Puconci Primary school and its branch schools have excellent conditions for the operation of school gardens that have been usefully exploited from the early XXI<sup>st</sup> century, on the basis of past experiences, to the satisfaction of schoolchildren. In that period, the school entered an internationally recognised Eco-Schools Programme aimed at promoting and raising awareness about sustainable development among children and students through their education and training, as well as active involvement in the local community and wider society. The Eco-Schools Programme at the Puconci Primary School is implemented in the true sense of a school for life by pursuing the following principles:

- care of people includes the protection of health, building of relationships and concern for the environment and nature
- natural science activities link the goals and contents of individual school subjects
- educational work within the school is comprehensive and integrated with the local community
- environmental education is an integral part of the objectives and content of all school subjects constituting the educational programme.



Figure 3 – Picture of the school from the air (the school garden with the eco-classroom next to the school on the south side)

## 3.1. Eco-classroom

The school garden is situated on the south side of the Puconci Elementary School. In the central part of the garden there is the eco-classroom which was built with the European funds support in 2012. The classroom itself provides schoolchildren with a lot of knowledge about cultural heritage since its north-eastern side represents a traditional Prekmurje house. The south-eastern part of the classroom has glazed surfaces, allowing the observation of various phenomena in nature in all weather conditions. The eco-classroom serves a variety of purposes, namely it is used:

- in all forms of educational work (teaching, after-school activities)
- in the implementation of Science and Technology Days
- in the implementation of projects, such as the Eco-School, renewable energy sources (solar energy)
- in the implementation of activities for pupils from other schools
- for the familiarisation with environmental issues
- within science subjects where pupils are encouraged to develop a positive attitude towards nature, make careful observations, learn about plants and animals, get used to field and research work and carry out simple experiments
- in elective subjects and extracurricular activities, such as beekeeping, chemistry experiments, art club, Eco-School
- in learning about the school environment (orchard, apiary, fish pond, field, etc.) where the acquiring of particular knowledge takes place in the open-air classroom and in the school surroundings
- in learning about weather phenomena in the vicinity of the school (operational weather station)
- in obtaining knowledge about the hometown history and geography
- in learning about the local cultural heritage and artistic creation in nature.



Figure 4 – The open-air eco-classroom



Figure 5 – The interior of the eco-classroom

#### 3.2. Permaculture garden

On the south side of the eco-classroom there is a permaculture garden intended for the education and raising the awareness of schoolchildren, their parents and all citizens about the importance of sustainable food production. The project, implemented with the assistance of an external expert, has been very successful, also with the involvement of many parents and other citizens.

Everyone participating in the project has recognised that the permaculture design system provides the possibility of satisfying one's needs while not harming the environment, but actually serving it and, moreover, that it offers a chance to our posterity to live in the environment of at least the same quality as we do. The permaculture garden has been maintained by the members of the Eco Club under the guidance of a mentor and in cooperation with the school janitor.



Figure 6 – Preparation of the permaculture garden



Figure 7 – Planting of seedlings in the garden







Figure 8 – Participation of parents and other citizens in the project



Figure 9 – Members of the Eco Club maintaining the garden

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## 3.3. School field

Activities in the school field combine the learning of crops cultivation in the most sustainable way and the utilisation of crops in the school kitchen. Cultivation and crop production are carried out according to the work plan, thus creating a possibility for the pupils to directly gain useful knowledge in natural science and other areas. An interesting project was implemented in this area in 2003, in fact, during the final period of the operation of experimental centres. Under the auspices of the Association for Technical Culture of Slovenia, one of the ten Experimental Centres for Agriculture and Seed Breeding operated successfully at the Puconci Primary School. Within the framework of the project on "Cultivation and Development of Culinary Products", muscat pumpkins were grown in the school field, as a superb culinary raw material since the whole plant is usable, i.e. its meat, seeds and flowers. The project was led by the school's enterprising teacher mentor Ignac Čeh who contributed a great deal to raising the awareness of not only the schoolchildren but also of their parents and other citizens. It is largely owing to him that muscat pumpkin products and the cultivation of medicinal herbs are gaining ground in the region.



Figure 10 – Muscat pumpkin grown on the school field



Figure 11 – Pumpkin research

## 3.4. School orchard

The school garden ends with a modern orchard on the east side and the school field on the south-western side. The orchard is managed by an external mentor and school janitors. It is protected against hail. In the school orchard children obtain knowledge about what happens in orchards through the seasons; moreover, Science Days on the topic of nature, especially the cultivation of fruit, take place in the school orchard.



Figure 12 – School orchard

## 3.5. School apiary

The school apiary stands south of the permaculture garden. Beekeeping has a long tradition and an important place in the operation of the school garden. The beekeeping comprises a theoretical part according to a book and a workbook about bees, and practical work in the apiary with the assistance of a beekeeper from the local beekeeping club. In the 2012-13 school year, preparations took place for the national competition of young beekeepers, where the members of the school beekeeping club won the Silver and the Gold Award. In 2005, the Slovenian Beekeepers' Association entrusted the Puconci Primary School with the task of organising the National Competition and Gathering of Young Beekeepers which was attended by over 300 schoolchildren, mentors and guests from all over Slovenia.



Figure 13 – Young beekeepers and their mentor at work



Figure 14 – Honey extraction

## 4. School Gardens at the Branch Schools at Bodonci and Mačkovci

Both branch schools endeavour to meet the objectives through varied activities, namely: education for environmental responsibility, education for a healthy lifestyle in a healthy environment (introduction of organic food, etc.), encouraging the creativity, innovation and exchange of ideas and efficient use of natural resources (water, waste, energy, etc.). At the Bodonci Branch School several projects were implemented in the 2012-13 school year on the topics of school plant nursery, orchard, garden, garden and beds, school canteen and classroom.



Figure 15 – School plant nursery



Figure 16 – Orchard



Figure 17 – Garden



*Figure 18 – School canteen* 



Figure 19 - Classroom

## 5. The School Garden is the Classroom for the Future

A few decades ago many schools had gardens. Modern times have brought changes to school green spaces which have been replaced by parking lots, playgrounds and other facilities, as a reflection of social changes. The principle of cooperation and closeness to nature has been replaced by hedonistic games, upgraded by indifferent capitalism and virtual perception of the world. Many individuals and institutions have realised that this approach leads to destruction and that there is a need to reverse this process. Therefore, the Institute for Sustainable Development succeeded to launch the School Eco-garden project and, in less than a year, attracted 134 primary schools, kindergartens, grammar schools, secondary schools and secondary school boarding homes that now maintain their organic gardens. Similar projects have been implemented by some other institutions.

At the Puconci Primary School we are aware that our garden is an important and modern educational tool. We are also aware that food is an important and ever more expensive commodity; therefore, it is necessary that schoolchildren learn about the importance of home-grown food without chemicals that is not harmful to human health and the environment. A well-maintained school garden greatly contributes to increasing the schoolchildren's and their parents' awareness of the importance of a healthy lifestyle, environmental protection and their sustainable development.

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# VULCANIA ADVENTURE PARK AT GRAD Daniel Kalamar

**Abstract**: At the village of Grad, the seat of the Grad Municipality, there are the remains of the youngest Slovene volcano which erupted three million years ago and coated the vestiges of the Pannonian Sea. Through the centuries rain, sun and wind have shaped the surface into a landscape unique for its appearance and even more for what lies beneath, e.g. the metamorphic rock, basalt, basaltic tuff, limestone and other minerals. The Vulcania Adventure Park tries to provide a glimpse into the geological treasures in an informative and fun way by showcasing its geological collection and offering the visitors a virtual experience of the Goričko landscape.

**Keywords**: Vulcania Adventure Park, Oli the Mole, geological history, Eza the Witch, Goričko, phoenix, millions of years, lava, Municipality of Grad

# Introduction

The Vulcania Adventure Park at Grad has been created in the hilly region of Goričko in the north-eastern part of Slovenia, close to the triple border of Austria, Slovenia and Hungary. It was established by the Grad Municipality in 2013 after a serious scientific and technical preparation in a narrow valley surrounded by hills covered with forests, fields and meadows. The main purpose of the institution has been to satisfy, through a highly sophisticated digital (ITC) technology and art, the curiosity of visitors and to raise their awareness of our planet's geological and ecological history, of the millennial transformation processes serving to educate all generations and, above all, the schoolchildren and youth.



Figure 1 – The Castle Grad with the surrounding landscape where the volcanic eruption took place Source: Municipality of Grad

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Figure 2 – The Magic Oli the Mole in the courtyard Source: ZUKD Grad (Photo: Danijela Krpič)



Figure 3 – The courtyard with the former Lednar's local tannery, presently the Geological Museum Goričko, and Oli the Mole Source: ZUKD Grad (Photo: Danijela Krpič)

#### The Landscape and Its Geological Richness

The village of Grad and the Grad Municipality lie in the north-eastern part of Slovenia. With its steep slopes and streams rippling over stone cascades, the hills surrounding the village are in stark contrast to the rest of the Pomurje landscape. They are what has remained of the youngest Slovene volcano which erupted three million years ago and coated the vestiges of the Pannonian sea. Through the centuries, rain, sun and wind have shaped the surface into a landscape unique for its appearance and even more for what lies beneath. Only a few kilometres apart there are several locations with opencast mining facilities where metamorphic rock, basalt, basaltic tuff, limestone with residues from the Pannonian Sea, flint and river deposits are extracted. In addition, thermal water springs, geothermal wells and a magical world of crystals are found here. Compared to other areas, nature has been extremely generous in this part of the Goričko landscape, resulting in a rich collection of geological features.



Figure 4 – The Magic Oli the Mole sitting Source: ZUKD Grad



Figure 5 – Fossil remains of snails and mussels proving the fact that the region of Goričko was under the sea level; location: Nuskova, Goričko Source: Viljem Podgoršek's collection (Photo: Miha Jeršek)

These natural values have been put to good use. Stone has been utilised for construction and as a decorative element, flint for making adhesives and glass, and water - due to the healing properties of the minerals it contains - for drinking and bathing. The Vulkanija Adventure Park Grad tries to provide a glimpse into these geological treasures in an informative and fun way by showcasing its geological collection and offering the visitors a virtual experience of the Goričko landscape.

## The Vulcania Adventure Park Institution at Grad

The Vulcania Adventure Park at Grad was open to the public on 31 August 2013. It covers an area (courtyard) of 700m<sup>2</sup> with a single-storey building, a magic creature Oli the Mole and metallic gates in the exterior, as well as a vast hall in the interior of the undertaking.

In the past, the one-storey building served as a local tannery which was a private property of the Lednar family. It has been recently restored and converted into the Geological Museum Goričko. The Magic Oli the Mole, created by the artist's fantasy, has been conceived as an esteemed scientist with a vast knowledge of the insides of the Earth and serves as a visitors' guide across the geological history of our planet in a whimsical and fun way. The metallic gates lead to the vast interior hall with comfortable furniture and abundantly equipped with 3D technology, presenting in a clear and engaging way the infernal processes in the interior of the Earth through millenaries.

## The Management

The Institution has been managed by ZUKD GRAD (Zavod za upravljanje kulturne dediščine, Grad - Agency for Cultural Heritage Management, Grad), Grad 174, 9264 Grad, Slovenia, phone: +386 2 553 10 00, e-mail: info@vulkanija.si, website: www. vulkanija.si

Director: Danijela Krpič. Staff: four well-trained custodians with high-school education and knowledge of foreign languages (English, German).

# 2014 annual budget: 150,000.00 EUR

Sources of financing: self-financing and the Municipality of Grad

# Magic Journey through the Geological History of the Region

The journey through the geological history is divided into two parts with Oli the Mole serving as a guide. Oli would have been quite an ordinary and unimportant mole, were it not for the fact that he was born at Grad in Goričko. As it is, Oli is an esteemed scientist with a vast knowledge of the insides of the Earth and he takes you on a journey through space and time when the ancient geological features were just emerging. In a whimsical and fun way, Oli makes sure that visitors never feel an ounce of boredom. His witty friend Eza the Witch makes sure that there is never a dull moment in Oli's life underground.

The first part contains display racks with stones and rocks, equipped with descriptions on panels and natural phenomena simulations that allow the visitors to gain a better knowledge of rocks and stones typical of this landscape and the natural forces that formed them.



Figure 6 – Auditorium with visitors Source: ZUKD Grad (Photo: Iztok Bončina)

In the old mill kitchen, the features of rocks and stones are presented in a clear and engaging way. Special attention is paid to basaltic tuff and to olivine, a crystal found in the basaltic tuff. Basaltic tuff was formed from hot volcanic ash deposits, mixed with hot contents of spewed lava that cooled into a hard grey stone. During the cooling process, the rock was exposed to high temperatures and hot gasses, triggering the "growth" of olivine crystals. This beautiful stone was named after its most common colour – olive green. Olivine is considered a semi-precious stone and was very popular as early as during the times of ancient Egypt.



Figure 7 – Olivine nodule in the basalt tuff. Grad is the only location (deposit) of the olivine nodules Source: Collection of the Museum of Natural Sciences of Slovenia (Photo: Miha Jeršek)

In the second part of the adventure park the visitors can observe how rocks are formed, how they emerge onto the Earth's surface and how they perish in its hot depths. Interactive games, a virtual tour of the underground and 3D technology take the visitors on a magical journey that started millions of years ago and formed seas, mountains, rivers and the atmosphere on Earth – now in the care and dominion of man.



Figure 8 – Volcano eruption Source: ZUKD Grad (Photo: Matjaž Požlep)



Figure 9 – Visitors in action Source: ZUKD Grad (Photo: Iztok Bončina)

Such a journey into the geological past allows the visitors to better understand and appreciate the present.

# Conclusion

The Vulcania Adventure Park at Grad represents an extraordinary and attractive research, educational and cultural centre. Since the very first moment of its functioning, it has received a wide response. There is a founded expectation that after a virtual experience of the forces of nature which have shaped the landscape and our world, the visitors will begin to grasp that people are merely random guests on this miraculous planet and everything surrounding us is a treasure to be cherished. Magical, because it was born in fire and suffering, and miraculous, because – like the phoenix – it rises from the ashes and is reborn in a new form.

# MEADOW ORCHARDS IN THE KOZJANSKO PARK Teo Hrvoje Oršanič

**Abstract**: The Kozjansko Park meadow orchards are viewed as a good park practice. Old fruit tree varieties are known for the fact that they do not need mineral fertilisation or the use of pesticides for the successful maturation of fruit. As a consequence nature and landscape remain preserved. Kozjansko Park is in different ways promoting and stimulating the further development of meadow orchards in the area and broader. One of the most influential activities is the Kozjansko Apple Festival, a well-known fair dedicated to old sorts of apples, organic farming and traditional crafts.

**Keywords**: Kozjansko Park, meadow orchards, revitalisation, good Park practice, healthy lifestyle, protection of nature and landscape, integration of land owners, Natura 2000 areas, biodiversity, international projects, Kozjansko Apple Festival, coexsistence - the Kozjansko Park trademark, Organic Food Festival

In the Kozjansko Regional Park, intensive work on meadow orchards started in 1999 when the Park joined the national project on Revitalisation of "Meadow Orchards and Fruit Gardens in Slovenia" and after the inventory of ornithofauna was compiled by the members of the Bird Watching and Study Association of Slovenia (DOPPS) in years 1998/1999. It has been recognised that the area is among the most important ones for the birds of meadow orchards. The abandonment of orchards, their overgrowing and clearing would lead to the gradual disappearance of birds.

The revitalisation and preservation of meadow orchards is a complex process, including various activities, development orientation and consequent multiplicative impacts. Meadow orchards, apple trees and their fruits have become precious and valuable – precious in the sense of maintaining the tradition, cultural heritage, protection of nature and landscape, healthy lifestyle and integration of different stakeholders, and valuable in the economic sense. This is also the best guarantee that such orchards will be preserved and strengthened, ensuring a continued habitat for plants and animals.

In the areas of Kozjansko and Posavje, fruit-growing has always been an important traditional agricultural branch. A centuries-old and environment-friendly management of orchards has created an environmentally important habitat – a high-trunk meadow orchard.

Apples from high-trunk orchards at Kozjansko have become a symbol of the successful integration of nature conservation, people and economic effects – since

there is an environmental story behind, one could even say that apples are "more than just a fruit". For this reason, the cultivation of high-trunk meadow orchards is considered an exceptionally good park practice.

## **Orchards as a Nature Protection Category**

Today, a traditional orchard of Kozjansko is no longer just an agricultural category, but it is a living space – a habitat of European importance (Code 83.151, extensively cultivated meadow orchards). Traditional orchards are characterised by widely spaced high-trunk fruit trees, planted on meadows. Orchards are home to rare and endangered birds, a gene bank, a co-creator of a typical landscape of Kozjansko and Bizeljsko, and an ever more important symbol of the park area identity.

An important milestone in the preservation of meadow orchards was achieved in 2004 when as much as 69% of the area was designated as a Natura 2000 area, of which 37% was proclaimed a Natura 2000 – SPA (special protected area) SI 5000033 Kozjansko according to the Birds Directive (Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds). Meadow orchards offer a habitat for the following qualification bird species: Eurasian wryneck (*Jynx torquilla*, A233), red-backed shrike (*Lanius collurio*, A338), common redstart (*Phoenicurus phoenicurus*), scops owl (*Otus scops*, A214), hoopoe (*Upupa epops*, A031) and European roller (*Coracias garrulus*, A231).

The Natura 2000 Operational Programme and Action Plan provide for protection measures that ensure maintaining the extent of high-trunk orchards, conservation of the redstart habitats and the present size of meadow areas (wryneck), and promote organic farming and the preservation of mosaic landscape through crop rotation, protection of orchards and maintenance or creation of hedges and planting of individual bushes and trees.

#### **Involvement in Projects and Results**

The participation in national and international projects ("Revitalisation of Meadow Orchards and Fruit Gardens in Slovenia", "High-trunk Meadow Orchards in the Protection of Biotic Diversity and Landscape Aesthetic Values" – Interreg IIIA Programme, Slovenia-Hungary-Croatia, "From Eurasian Wryneck to Juice" – IPA, "Opportunities in Traditional Orchards at Posavje" – LAS Leader) has contributed to the achievement of enviable results in the fields of education and awareness raising, inventorying and revitalisation of meadow orchards, the establishment of a traditional fruit nursery garden and orchard collections, and promoting the conservation of useful organisms – pollinators, direct and indirect assistance to farmers in caring for

meadow orchards, purchasing equipment and fruit processing, enhancing expertise and in understanding the role and significance of meadow orchards.

# Kozjansko Apple Festival – an environmental fair "with a soul"

The annual event at the Kozjansko Park, which takes place on the second weekend in October, provides an opportunity for the population in the protected area to promote and market their products, produced and processed organically and in an as nature-friendly way as possible. The fair is accompanied by rich cultural, competition and entertainment programmes (a hike through orchards, lectures, exhibition of apples, presentation of fruit processing, etc.). The event is co-organised by cultural, sports, mushroomers, fire fighters, cyclists, photographers and fruit growers' associations. An ever increasing number of providers and exhibitors demonstrates that such an ecological and ethnological event is indispensable as a top of the pyramid of a wide range of nature conservation activities. From humble beginnings, the Kozjansko Apple Festival developed into one of the most important events at Kozjansko, attended by exhibitors and visitors from Slovenia and abroad.

# Coexistence – The Kozjansko Park Trademark

The promotion of sustainable regional produce from Kozjansko, under the "Coexistence-Kozjansko Park" trademark, developed by the Kozjansko Regional Park, may represent a guarantee and support in the marketing on both domestic and foreign markets, thus adding an economic dimension to the story of the meadow orchards preservation project. Under certain conditions, creators in the fields of art and handicraft may also be granted this trademark.

# **Organic Food Festival**

As a reflection of the raising environmental awareness, the demand for organic food has increased as well. Organic agriculture certainly follows the spirit of the protected area's mission and hence, to support organic farming, the Kozjansko Park organises the Organic Food Festival together with the producers of organic food. It is expected that over years the event will develop into a very good park practice.

## What next?

High-trunk meadow orchards have been an underestimated environmental, agricultural and economic category for decades. In the further management and governance of high-trunk orchards, it is essential to gain incentives at national level, both in technical and financial terms. It is important that the agricultural profession

recognises high-trunk meadow orchards as a value and, therefore, encourages farmers to sustain and preserve the existing and establish new high-trunk meadow orchards and, moreover, stimulates them to engage in organic farming. Organic farming will help pursue the aims of Natura 2000, while the market value of organically produced and processed products will grow. Organic fruit growers, agricultural advisers, nature conservationists and consumers are the key stakeholders in the integrated process of high-trunk meadow orchards preservation. Their concerted action will lead to the achievement of basic, nature protection, marketing and promotion objectives of meadow orchards management and governance.

There is no doubt that the least harmful food is increasingly gaining in importance. There is no doubt that a well-preserved landscape is the best "dowry" for the future generation. There is no doubt that apples from Kozjansko have an extremely important role to play in this.



Kozjansko Park - Kozjansko Apple Festival (Source: Kozjansko Park Archive)



Kozjansko Park - Kozjansko Meadow Orchard (Source: Kozjansko Park Archive)

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# BIO-FARM GORIČKA VES Dejan Rengeo

**Abstract**: The author presents a bio-farm in the village of Šalovci in Goričko (Slovenia) with several agricultural products for known and unknown consumers.

Keywords: bio-farm, hemp, protected area, production, processing

After a long break, large areas were planted with hemp in Goričko in 1995. The main idea was to revive the domestic manufacturing of canvas. A large police raid of hemp fields took place which increased the interest in hemp, as it is often the case with forbidden things. At that time, the renaissance of hemp production started in Europe and it slowly turned into a green revolution. There is a lot written and said about hemp today and people are becoming acquainted with it, in fact, re-discovering it. And not just people, but wild life too. It took the deer of Goričko ten years to start nibbling on hemp. This fact suggests that not only humans, but animals too, need time to get re-acquainted with the forgotten plant.

The Rengeo Farm in the Goričko region was among the first to stop using artificial fertilisers and pesticides. It joined the organic control network and, together with the controlling agency, it gathered new skills in organic farming. The Farm took a path of its own and has stood out of the average up to the present day. Striving to be different, particularly with regard to nature and logic, is the right path for people who are the only not organically oriented living beings.

My father, Mirko Rengeo, married my mother Zorica from the village of Šalovci in Goričko. The Abraham Farm has always been prosperous. My grandfather Ernest (Zorica's father), also called Minister, was well-known as an excellent trader in farm produce, such as wood, apples, eggs, schnapps and wine. His grandfather, that is my grand-grand-grandfather, was also a kapunar<sup>1</sup>. Mirko was a customs officer who came to Goričko by train. Later, when the railway was dismantled, he stayed for good. In the seventies of the last century, he was fired from Customs because he refused to become a member of the Communist Party, and took a job as a salesman for the SIP Šempeter, a large company producing farming equipment. There he made a revolution in the farming machinery business of Yugoslavia. He carried out demonstrations of equipment, operating three machines simultaneously and exciting the crowd with his acrobatics. His home farm was but stacked with prototypes of interesting farming machinery and tools, all brought in for trial and testing. After a

<sup>&</sup>lt;sup>1</sup> Kapunar = salesman of home-grown poultry and eggs

few years, my mother Zorica somehow managed to tame him and persuaded him to take a job in a local store of the Panonka Cooperative. In the 1970s, agriculture was at its peak and machinery was selling well, and not only machines, but other things too.

With the independence, the age of limited liability companies began in Slovenia and hence the Gorička Vas Ltd. was established as a family company, later renamed to Gorička Ves Ltd. in the local dialect. In the beginning, all kinds of intermediate goods were traded, but in time the company focused on organic produce.

In 2001 my father came up with the idea of a van, which became a shop on wheels, in front of which people have been queuing without any angry remarks or comments. It is also worth noting that at noon when the produce is sold out, the pressure in tyres greatly reduces, as the van is almost three tonnes lighter.



Zorica and Mirko Rengeo at work



A treasure of bio-products

Today, a good knack in trading, as well as boldness and innovativeness, are required to sell agricultural produce. In fact, one has to stand out of the crowd. The basic principle of successful marketing and sound financial result is the finalisation of the crop.

The Rengeo Farm has encouraged a number of the surrounding farmers and hence the cooperative agricultural production has been developing. The cooperation with the organic farmers from Hungary has been encouraging, whereas also the farmers on the Croatian side have been activated. With a high degree of commitment and consistency, the farmers from the neighbouring countries have become a model and interesting business partners. Although the physical borders are long gone, they still exist in the minds of people.

At the other end of the Šalovci village, another model farm, the Korenika Farm, has been established, engaging 60 socially marginalised people. The cooperation of

the two farms has created a positive atmosphere which can be felt throughout the village. People feel the right direction.

The keyword extract is of vital importance for the development of the Goričko region.

# IV. ANNEXES

# LIST OF AUTHORS

**Ms.** Andreja Abina, doctoral student at Jožef Stefan International Postgraduate School (Ljubljana, Slovenia) in the field of ground penetrating radar, terahertz (THz) spectroscopy and imaging as well as materials science. She published an original scientific paper on the structural analysis of insulating polymer foams with THz spectroscopy and imaging. She has participated in several research projects at the national and EU level. She is also involved in writing proposals for research projects.

Prim. **Branislava Belović**, MD, MSc, is a paediatrician and specialist in public health, chief of the Department for Social Medicine (Institute of Public Health Murska Sobota) and president of the Agricultural Tourist Cooperative Žitek. She is an expert in health promotion and reducing health inequalities. She also uses her professional expertise in voluntary and charity work.

**Dr. Gordana Beltram,** BSc in Geography and PhD in Human Ecology, working at the Ministry of Agriculture and the Environment on nature conservation issues, was the Director of the Public Agency Park Škocjanske jame, Slovenia, between 2009 and 2014. Between 1997 and 2009 Gordana Beltram was working at the Ministry of the Environment on international biodiversity issues, being responsible for the implementation and coordination of several biodiversity related conventions. During the Slovenian Presidency of the EU Council she was chairing the EU biodiversity group at the European Council. She has been involved in different international committees, organisations and conventions related to nature conservation and sustainable use of natural resources.

**Mr. Mladen Berginc** was born in 1950. He is a lawyer, retired from 2013, former chief of nature conservation division in the Ministry of Environment. Previously he worked in the Triglav National Park. In his long nature conservation career he was a member of different national and international organisations and bodies.

**Dr. Bernard Goršak** was born on 28 January 1968 in Murska Sobota, Slovenia. He has received his doctorate in Nature Protection at the University of Ljubljana (2009). He is currently the Director of the Public Institution Nature Park Goričko.

**Ms. Anita Hrast** is founder and general manager of IRDO - Institute for the Development of Social Responsibility (from 2004: www.irdo.si) and at the same time a registered researcher at Slovenian Research Agency. She is researching and publishing texts in the social responsibility and marketing field in different magazines, participates in Slovene and international scientific conferences and is involved in several projects in the area of social responsibility. Her vision of raising

awareness on social responsibility is realised also by different marketing and PR activities - through the IRDO Institute Award on Magdalena Festival and Horus award (www.horus.si). As a researcher and development manager she is working in communication, marketing, social responsibility and is developing new methods, new projects, products and services for different clients (companies, media, individual). She links many Slovene and international organisations and experts with the purpose to develop and implement social responsibility in theory and practice.

**Prof. Dr. Anton Jeglič**, retired Professor at the Faculty of Electrical Engineering (University of Ljubljana, Slovenia), expert in magnetic field measurements, bioelectromagnetics, and effects of electromagnetic field on living organisms, recipient of the Kidrič prize and many other prizes for inventions and technical innovations, author of 14 patents. In the field of electrical stimulation he developed a stimulator with electromagnetic power and control.

**Mr. Daniel Kalamar** was born on 7 July 1959 in Rogašovci, Prekmurje, Slovenia. He has received his bachelor degree in economics. He is a businessman employed in IMP Panonija, Jeklotehna foreign trade. He has been the Mayor of the Grad municipality for the last sixteen years. He is active in the area of acquiring European development funds (more than 30 successful projects) and is one of the founders and the first CEO of Goričko Nature Park.

**Mr. Marko Lenarčič** was born on 19 May 1957. He graduated at the University of Ljubljana, Faculty for architecture – Construction and geodesy in 1981. He is the director of the non-profit company Logarska dolina Ltd which runs the landscape park Logarska valley. Main focus: visitors management and promoting green mobility in the park.

**Prof. Dr. Janez Malačič** graduated at the Faculty of Arts (1973) and at the Faculty of Economics (1974) of the Ljubljana University, Slovenia. He finished his PhD thesis at the Faculty of Economics, University of Ljubljana (1983). Prof. Malačič has spent his career at the Faculty of Economics of the Ljubljana University. Since 1994 he has held the position of full professor of demography and labour economics. Prof. Malačič has collaborated with different institutions, from government to the international organisations such as European Commission and United Nations. In 1994 he participated at the UN Conference on Population and Development. He is a member of different Slovenian and international professional societies and author of two books and numerous scientific and professional articles in Slovene and several other languages.

**Double doctor Matjaž Mulej** is professor emeritus of systems and innovation theory, currently working on their application to the practical development of social

responsibility of humans and their organisations as the head of the research centre and experts board of IRDO Institute for development of social responsibility (Maribor, Slovenia). He is member of three international academies of sciences and arts (Salzburg, Paris, Vienna). He published approximately 1,700 contributions (mostly with coauthors) in almost 50 countries, including about 60 books and proceedings as editor and about 60 articles in world's top journals.

**Ms. Nastja Mulej**, MA, is a trainer of creative, constructive, and collaborative thinking, Slovenia. Her field of experience: teaching & training, advertising & marketing, journalist & PR. Education: economics, sociology and communication. Special knowledge: the only Slovenian licensed trainer of de Bono thinking techniques: Six Thinking Hats, Lateral Thinking, CoRT (direct teaching of thinking in schools) and Simplicity. Three things that describe her greatest achievements in life: 1) successfully spreading the 'virus' of deliberate creative and constructive thinking across Slovenia; 2) being positive and optimistic most of the time and teaching others to be the same; 3) her family and friends.

**Mr. Ernest Nemec** was born on 6 April 1959 in Adrijanci, Slovenia. He is professor of Geography and History University of Maribor (2005) and headmaster of the Elementary School Puconci (21 years).

**Mr. Teo Hrvoje Oršanič**, MSc, was born on 23 August 1960 in Brežice. He is MSc of biological sciences - area nature conservancy (2005), Director of the Public Institute Kozjansko Regional Park, President of the Slovenian Nature Parks Association, President of the Professional Board of Nature Park Kolpa, Natura 2000 communicator, member of many international projects management boards.

**Ms. Barbara Ploštajner** was born on 24 November 1974 in Krivica pri Pilšanju, Slovenia. She is BSc of geography and history, employed in the Public Institute Kozjansko Regional Park in the department for nature conservancy. She is author of many articles and she is engaged in many international projects.

**Ms. Amna Potočnik** is spending her life in search for novelties, in research as well as in practice, especially in regional development. She walks from semiotics to dialectical system theory, strategic management, cybernetics and metaphysics - as a humble searcher of "Meaning/Understanding" and is confident that the personal responsibility is a precondition of any viable organisation and that ethical standards must be recursive on all development levels, including the RDAs/ARIs.

**Dr. Janez Potočnik** (1958) graduated from the Faculty of Economics at the University of Ljubljana, Slovenia (Ph.D. degree 1993). After a successful career starting in 1989 in Slovenia as a researcher at the Institute of Economic Research he was Director of

the Institute of Macroeconomic Analysis and Development (1994). He was appointed Head of Negotiating Team for Accession of Slovenia to the EU (1998). He was also Director of the Government Office for European Affairs (2000), Minister Councillor at the Office of the Prime Minister (2001) and Minister responsible for European Affairs (2002). In 2004 he joined the European Commission, first as »shadow« Commissioner for Enlargement and then as Commissioner responsible for Science and Research. In 2010 Dr. Potočnik became Commissioner for Environment.

**Mr. Uroš Puc** is doctoral student at Jožef Stefan International Postgraduate School (Ljubljana, Slovenia) in the field of THz spectroscopy and imaging as well as ground penetrating radar, recipient of the best poster award in Nanosciences and Nanotechnologies program at the 2012 IPS Student Conference for a contribution on underwater electromagnetic remote sensing. He participated in several EU and national research projects in electromagnetic technologies.

**Mr. Dejan Rengeo** has received his bachelor degree in agricultural engineering and he is the professional counsellor of the owner of the Bio-Farm Rengeo. He is specialised in industrial plants, especially hemp. He publishes articles in the Slovene professional publications as well as in newspapers.

**Dr. Uwe Riecken** works as scientific staff at the German Federal Agency for Nature Conservation since 1987. Currently he is a senior scientist and head of the Department on Biotope Protection and Landscape Ecology. His current key tasks are the red data book of threatened habitat types, wilderness areas, habitat management, ecologic networks and the Green Belt. He is the German representative and national focal point for the European Green Belt initiative. He studied biology at the University of Kiel and did his PhD at the University of Marburg in nature conservation on the use of space and habitats by epigaeic arthropods in cultural landscapes.

Assist. Prof. Dr. Mitja Slavinec was born on 30 May 1964 in Murska Sobota, Slovenia. He has received his doctorate degree in Physics at the University of Maribor, Faculty of Natural Sciences and Mathematics (1990). He is the Head of Department for Physics, President of Kmica Astronomical Society, President of the Slovenian Association for Technical Culture and President of Pomurje Academic Scientific Union, editor of the Astronomers in Kmica, editor of the Anali PAZU and editor of the Pomurska Obzorja.

**Dr. Andrej Sovinc** was born on 24 June 1964. He has received his PhD in Geography at the University of Primorska (2011). He is the Head of the Secovlje Salina Nature Park, Slovenia, and the Regional Vice-Chair for Europe of the IUCN World Commission on Protected Areas.

**Mr. Marko Starman** holds a Master of Laws (LLM) from the Law Faculty of the University of Chicago and is a senior lecturer in administrative law at the European Faculty of Law. He led and is still a member of the (Slovenian) Government Commission for the creation of gas terminals in the gulf of Trieste and its coastal area. In addition to coordination between the ministries and government departments, he also defines the specific tasks of the expert group. He also leads a team of legal experts from various ministries and the State Attorney's Office of the Republic of Slovenia. Since 2008 he is the Director of the Public Institution Nature Park Strunjan.

**Ms. Nataša Šalaja**, BSc, was born on 19 January 1973 in Jesenice, Slovenia. She has received her B.Sc. in Economics, University of Ljubljana (1996). She has been working for DOPPS – BirdLife Slovenia since 2000 as the manager of Škocjanski zatok Nature Reserve, actively involved in the restoration of the area, its day-to-day management as well as planning and fundraising for the visitor facilities, with broad experience in planning and implementation of EU conservation projects, as well as financial aspects, and thus also engaged in other DOPPS conservation projects and financial management; national delegate in the Board of Members of Wetlands International.

**Mr. Karel Šalamon** was born on 7 July 1962 in Fikšinci, Slovenia. He is a teacher of Physics and Technical education working at Grad primary school in Grad, Slovenia. His work is entirely focused on young people. With the help of modern teaching technology in the classroom he strives to teach children about the world around them based on physical laws. He constantly encourages children's creativity because on the basis of their imagination, built on the proven skills of ancestors, they upgrade it with the challenges of the present time.

**Dr. Simona Šarotar Žižek**, Assisant Professor, University of Maribor, Faculty of Economic and business, Razlagova 14, Maribor, SI 2000, Slovenia, simona.sarotarzizek@uni-mb.si; PhD. in Economic and Business Sciences. She upgraded her theoretical knowledge permanently by the practical work at company Mura d.d. as assistant director for Total Quality Management department, secretary of the Board of the company Mura d.d. and as Head of Strategic Development. After 9 years, she joined the University of Maribor, Faculty of Economics and Business, in 2007 as Associated Professor HRM. She is author or co-author of articles in several international and Slovenian journals and participates in scientific and expert conferences.

**Mr. Martin Šolar**, MSc, was born on 1 September 1963 in Jesenice, Slovenia. He has received his M.Sc. in Nature Heritage protection, University of Ljubljana (2002). He is a professional staff member and former Triglav National Park director,

chair of Slovene Nature Parks Association in 2013, chair of the Slovene UNESCO MAB committee since 2007, IUCN World Commission for protected areas member, Europarc federation council member (2003 - 2008), Alpine protected area network presidency member since 2009. He is the author of more than two hundred articles in the field of nature conservation and protected areas.

**Dr. Karin Ullrich** is working as scientific staff at the German Federal Agency for Nature Conservation in the Department on Biotope Protection and Landscape Ecology since 2001. Her key tasks are national and international ecologic networks, the German and European Green Belt and the conservation of bogs and mires. She studied biology at the University of Freiburg with focus on vegetation and animal ecology and did her PhD at the Geobotanical Institute of the ETH-Zürich (Switzerland).

**Prof. Dr. Aleksander Zidanšek**, researcher in condensed matter physics at Jožef Stefan Institute (Ljubljana, Slovenia), Secretary General of the Jožef Stefan International Postgraduate School and Professor of Physics at the Faculty of Natural Sciences and Mathematics (University of Maribor, Slovenia), associate member of the Club of Rome, and Acting President of the Slovenian Association for the Club of Rome.

**Ms. Barbara Zupanc** is the director of Ljubljana Marsh Nature Park. After finishing her studies (political sciences and international relations), she worked predominantly in the public sector (local and national institutions), in the field of SMEs and tourism development. In the 1990s she was elected Member of Parliament of the Republic of Slovenia. Later, she managed the Tourism Department of the Ljubljana City Municipality. She has been engaged in nature conservation since 2003 when she took over the project of designation of Ljubljana Marsh as a nature protected area. The park was established in 2008 and Ms. Zupanc has been employed as a director of the Public Institute that manages the Ljubljana Marsh Nature Park ever since.



Figure 1 – Protected areas in Slovenia



Figure 2 – Nature Parks in Slovenia